

For Reference

Not to be taken from this room

NORTHEASTERN UNIVERSITY



Catalogs of

COLLEGE OF LIBERAL ARTS

COLLEGE OF ENGINEERING

COLLEGE OF BUSINESS ADMINISTRATION

SCHOOL OF LAW

SCHOOL OF BUSINESS

EVENING COURSES OF THE COLLEGE OF LIBERAL ARTS

LINCOLN TECHNICAL INSTITUTE

LINCOLN PREPARATORY SCHOOL

HUNTINGTON SCHOOL FOR BOYS

NORTHEASTERN UNIVERSITY

C O L L E G E S O F

Liberal Arts
Business Administration
Engineering

1944-1946



(CO-EDUCATIONAL)

BOSTON 15, MASSACHUSETTS

July, 1944

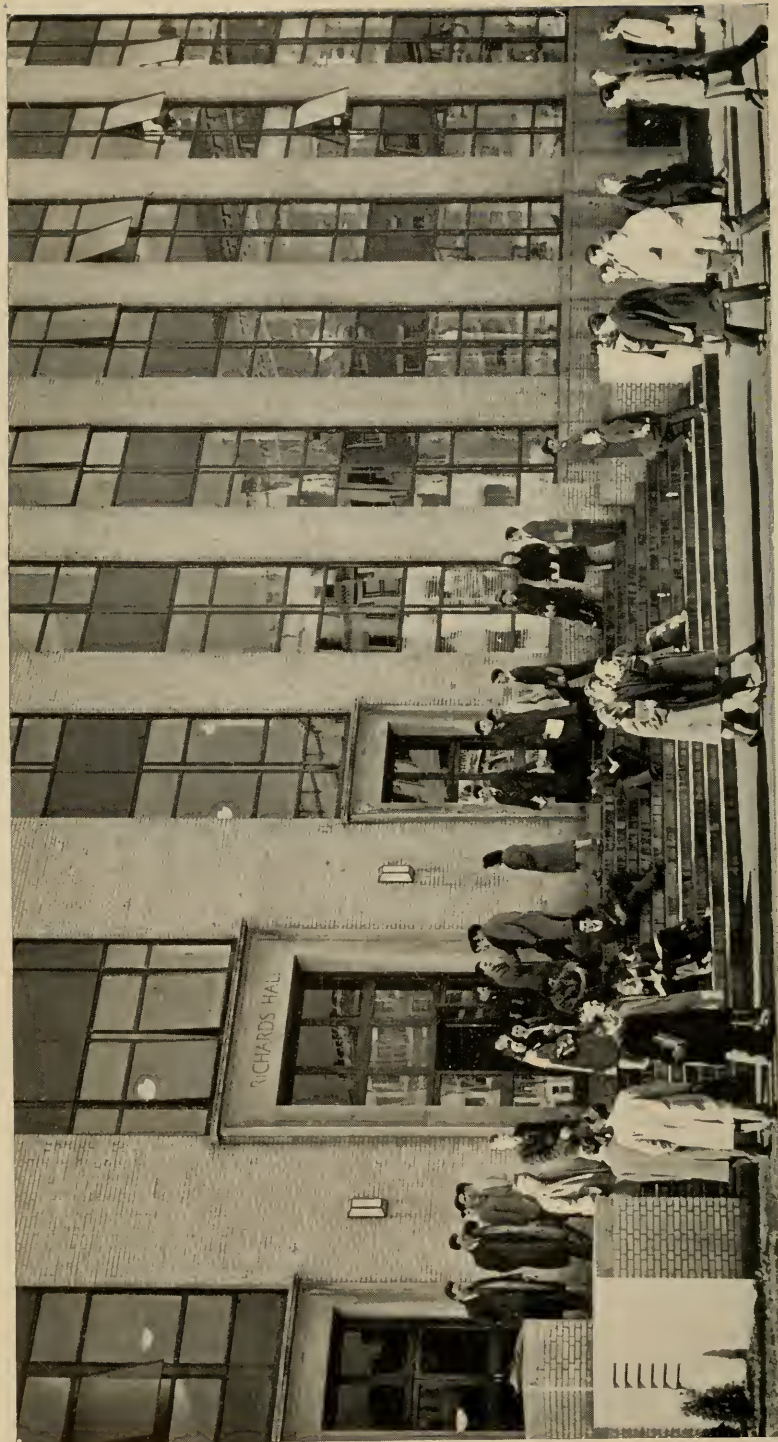
Gifts and Bequests

Northeastern University will welcome gifts and bequests for the following purposes:

- (a) For its building program.
- (b) For general endowment.
- (c) For specific purposes which may especially appeal to the donor.

It is suggested that, when possible, those contemplating gifts or bequests confer with the President of the University regarding the University's needs before legal papers are drawn.

Gifts and bequests should be made only in the University's legal name, which is "Northeastern University."



RICHARDS HALL

NORTHEASTERN UNIVERSITY

Day Colleges

General Information

1944-1946



(CO-EDUCATIONAL)

BOSTON 15, MASSACHUSETTS

July, 1944

A STATEMENT OF WARTIME POLICY

THIS CATALOG is issued while the United States is engaged in world-wide war. Programs of the Day Colleges have been adjusted to the needs of the emergency, but the faculty is making every effort to see that the courses offered are serviceable both for immediate and long-range educational objectives.

Northeastern University in common with other institutions of higher learning throughout the land has co-operated fully with the government during wartime in meeting special training needs. Changes in the regular curricula of the University are being made from time to time as developments of the war require. Northeastern University plans, however, to carry on its basic curricula with as few changes as possible in order that those men and women who can do so may pursue courses of study that will prepare them for greater service in the postwar period when there will inevitably be a great shortage of college trained people.

For the present, the Day Colleges are operating on a fully accelerated schedule of four academic terms a year. Students may elect the full-time or the Co-operative Plan during the war emergency. A Veterans' Co-ordinator has been appointed to counsel returning servicemen and women and assist them in arranging satisfactory programs of study according to their individual needs.

Special bulletins will be issued to supplement the present catalog as occasion demands and as new policies are adopted by the University.

NORTHEASTERN UNIVERSITY

Day Colleges

COLLEGE OF LIBERAL ARTS
COLLEGE OF BUSINESS ADMINISTRATION
COLLEGE OF ENGINEERING

CONDUCTED ON THE CO-OPERATIVE PLAN

Table of Contents

	<i>Pages</i>
I. NORTHEASTERN UNIVERSITY	
1. Calendar for the College Year 1944-1946.....	4
2. The University Corporation	6
3. Faculty and Staff	7
4. Northeastern University—General Statement	19
5. Buildings and Facilities.....	22
6. Student Activities.....	32
7. Co-operative Plan of Education.....	40
8. General Information About the Day Colleges	45
II. COLLEGE OF LIBERAL ARTS.....	61
III. COLLEGE OF BUSINESS ADMINISTRATION.....	139
IV. COLLEGE OF ENGINEERING.....	173
V. COURSES OF INSTRUCTION.....	233
VI. INDEX.....	247

Calendar for the College Year, 1944-1945

1944

- SEPTEMBER 11 *Monday*: Opening of new term for upperclass students.
- SEPTEMBER 25 *Monday*: Registration and opening of college year for new Division C Freshman class. Students failing to register promptly on September 25 will be charged a late registration fee of five dollars (\$5.00).
- OCTOBER 12 *Thursday*: Columbus Day. (College exercises omitted.)
- NOVEMBER 6 *Monday*: Second semester begins for the Division B Freshman class which entered in July, 1944.
- NOVEMBER 11 *Saturday*: Armistice Day. (College exercises omitted.)
- NOVEMBER 13 } Vacation period for the Division A Freshman
DECEMBER 11 } class which entered in March, 1944.
- NOVEMBER 22 *Wednesday*: College exercises omitted after 1:00 p.m.
- NOVEMBER 23 *Thursday*: Thanksgiving Day. (College exercises omitted.)
- DECEMBER 2 *Saturday*: Baccalaureate and Commencement.
- DECEMBER 4 }
DECEMBER 9 } Vacation period for all Day College Students.
- DECEMBER 11 *Monday*: Opening of new term for upperclass students.
- DECEMBER 25 *Monday*: Christmas. (College exercises omitted.)

1945

- JANUARY 1 *Monday*: New Year's Day. (College exercises omitted.)
- JANUARY 22 } Vacation period for the Division C Freshman
JANUARY 27 } class which entered in September, 1944.
- JANUARY 29 *Monday*: Second semester begins for the Division C Freshman class which entered in September 1944.

- FEBRUARY 22 *Thursday*: Washington's Birthday. (College exercises omitted.)
- MARCH 5 }
MARCH 10 } Vacation period for all Day College Students.
- MARCH 12 *Monday*: Opening of new term for upperclass students.
- MARCH 12 *Monday*: Registration and opening of college year for new Division A Freshman class. Students failing to register promptly on March 12 will be charged a late registration fee of five dollars (\$5.00).
- APRIL 19 *Thursday*: Patriots' Day. (College exercises omitted.)
- MAY 28 }
JUNE 9 } Vacation period for Division C Freshman class which entered in September, 1944.
- MAY 30 *Wednesday*: Memorial Day. (College exercises omitted.)
- JUNE 4 }
JUNE 9 } Vacation period for all Day College Students.
- JUNE 11 *Monday*: Opening of new term for upperclass students.
- JUNE 11 *Monday*: Registration and opening of college year for new Division B Freshman class. Students failing to register promptly on June 11 will be charged a late registration fee of five dollars (\$5.00).
- JULY 4 *Wednesday*: Independence Day. (College exercises omitted.)
- JULY 9 }
JULY 14 } Vacation period for the Division A Freshman class which entered in March, 1945.
- JULY 16 *Monday*: Second semester begins for the Division A Freshman class which entered in March, 1945.
- SEPTEMBER 3 }
SEPTEMBER 8 } Vacation period for all Day College Students.
- SEPTEMBER 10 *Monday*: Registration and opening of college year for new Division C Freshman class. Students failing to register promptly on September 10 will be charged a late registration fee of five dollars (\$5.00).

The Northeastern University Corporation

ROBERT GRAY DODGE, *Chairman*
 FRANK LINCOLN RICHARDSON, *Vice-Chairman*
 HENRY NATHANIEL ANDREWS, *Treasurer*
 CARL STEPHENS ELL, *President of the University*
 EVERETT AVERY CHURCHILL, *Secretary*

JOSEPH FLORENCE ABBOTT
 CHARLES FRANCIS ADAMS
 WILMAN EDWARD ADAMS
 ROGER AMORY
 ROBERT BALDWIN
 ARTHUR ATWOOD BALLANTINE
 GEORGE LOUIS BARNES
 THOMAS PRINCE BEAL
 FARWELL GREGG BEMIS
 SAMUEL BRUCE BLACK
 HENRY GODDARD BRADLEE
 GEORGE AUGUSTUS BURNHAM
 GODFREY LOWELL CABOT
 PAUL CODMAN CABOT
 WALTER CHANNING
 WILLIAM CONVERSE CHICK
 PAUL FOSTER CLARK
 SEARS B. CONDIT
 ALBERT MORTON CREIGHTON
 EDWARD DANA
 EDWARD DANE
 JAMES WILLIAM DANIELS
 WILLIAM JAMES DAVIDSON
 PAUL AUGUSTUS DRAPER
 DAVID FRANK EDWARDS
 WILLIAM PARTRIDGE ELLISON
 JOSEPH BUELL ELY
 JOHN WELLS FARLEY
 ALLAN FORBES
 ERNEST BIGELOW FREEMAN
 FRANKLIN WILE GANSE
 HARVEY DOW GIBSON
 MERRILL GRISWOLD
 HENRY INGRAHAM HARRIMAN
 CARROLL SHERLOCK HARVEY
 CHANDLER HOVEY
 WESTON HOWLAND
 HOWARD MUNSON HUBBARD
 MAYNARD HUTCHINSON
 ARTHUR STODDARD JOHNSON
 CHARLES BERKLEY JOHNSON
 JACOB JOSEPH KAPLAN
 HARRY HAMILTON KERR
 FRANK HOWARD LAHEY
 HALFDAN LEE

GALEN DAVID LIGHT
 EDWARD ABBOTT MACMASTER
 JOHN RUSSELL MACOMBER
 ALBERT EDWARD MARSHALL
 HAROLD FRANCIS MASON
 JAMES FRANKLIN McELWAIN
 HUGH DEAN McLELLAN
 IRWIN LIKELY MOORE
 FRED LESTER MORGAN
 IRVING EDWIN MOULTROP
 CLARENCE LUCIAN NEWTON
 SAMUEL NORWICH
 OLAF OLSEN
 AUGUSTIN HAMILTON PARKER, JR.
 GEORGE EDWIN PIERCE
 ROGER PIERCE
 MATTHEW POROSKY
 FREDERICK SANFORD PRATT
 ROGER PRESTON
 HARRY WENDELL PROUT
 SIDNEY RABINOVITZ
 STUART CRAIG RAND
 WILLIAM McNEAR RAND
 JAMES LORIN RICHARDS
 HAROLD BOURS RICHMOND
 JOHN JAMES ROBINSON
 CHARLES MILTON ROGERSON
 ROBERT BILLINGS RUGG
 LEVERETT SALTONSTALL
 RUSSELL MARYLAND SANDERS
 ANDREW SEBASTIAN SEILER
 FRANK PALMER SPEARE
 RUSSELL HENRY STAFFORD
 FRANCIS ROBERT CARNEGIE STEELE
 CHARLES STETSON
 EARL PLACE STEVENSON
 ROBERT TREAT PAINE STORER
 FRANK HORACE STUART
 EDWARD WATSON SUPPLE
 RALPH EMERSON THOMPSON
 JAMES VINCENT TONER
 ELIOT WADSWORTH
 EUSTIS WALCOTT
 EDWIN SIBLEY WEBSTER
 SINCLAIR WEEKS

General University Committees

Executive Council

CARL STEPHENS ELL, *Chairman*

EVERETT AVERY CHURCHILL
JAMES WALLACE LEES
MILTON JOHN SCHLAGENHAUF

SYDNEY KENNETH SKOLFIELD
WILLIAM CROMBIE WHITE
RUSSELL WHITNEY

University Cabinet

CARL STEPHENS ELL, *Chairman*

ROBERT BRUCE
EVERETT AVERY CHURCHILL
CHARLES WILLIAM HAVICE
WILFRED STANLEY LAKE
JAMES WALLACE LEES
HAROLD WESLEY MELVIN
WINTHROP ELIOT NIGHTINGALE

RUDOLF OSCAR OBERG
EDWARD SNOW PARSONS
JOHN BUTLER PUGSLEY
MILTON JOHN SCHLAGENHAUF
SYDNEY KENNETH SKOLFIELD
J. KENNETH STEVENSON
WILLIAM CROMBIE WHITE

RUSSELL WHITNEY

Library Committee

EVERETT AVERY CHURCHILL, *Chairman*

ROBERT BRUCE
WILFRED STANLEY LAKE

MYRA EDNA WHITE
WILLIAM CROMBIE WHITE

RUSSELL WHITNEY

General Officers of the University

President

CARL STEPHENS ELL, A.B., M.S., Ed.M., Sc.D.

Office 186 Richards Hall

Res. 21 Beaumont Ave., Newtonville

President Emeritus

FRANK PALMER SPEARE, M.H., LL.D.

Res. 280 Beacon St., Boston

Vice-President

EVERETT AVERY CHURCHILL, A.B., Ed.D.

Office 138 Richards Hall

Res. 50 Follen St., Cambridge

Comptroller

RUSSELL WHITNEY, S.B., LL.B.

Office 115 Richards Hall

Res. 665 Great Plain Ave., Needham

Officers of the Day Colleges

Director of Day Colleges and Dean of the College of Engineering

WILLIAM CROMBIE WHITE, S.B., Ed.M.
Office 152 Richards Hall

Res. 30 Summit Rd., Wellesley

Dean of the College of Liberal Arts

WILFRED STANLEY LAKE, A.B., M.A., Ph.D.
Office 253 Richards Hall

Res. 59 Hinckley Rd., Waban

Acting Dean of the College of Business Administration

ROBERT BRUCE, B.C.S., M.C.S.
Office 352 East Building

Res. 12 Elliott St., Winthrop

Director of Admissions

MILTON JOHN SCHLAGENHAUF, A.B., B.D., M.A.
Office 150 Richards Hall

Res. 96 Blakely Rd., Medford
Telephone: Mystic 6148-M

Institutional Representative and Director of E.S.M.W.T. Program

ALBERT ELLSWORTH EVERETT, S.B., M.B.A.
Office 154 Richards Hall

Res. 4 Crown St., Auburndale

Secretary of the Faculty

GEORGE RAYMOND FENNELL, S.B., M.B.A.
Office 153 Richards Hall

Res. 42 Fremont Ave., Everett

Dean of Chapel

CHARLES WILLIAM HAVICE, A.B., M.A., S.T.B., Ph.D.
Office 357 Richards Hall

Res. 178 Goden St., Belmont

Dean of Students

HAROLD WESLEY MELVIN, A.B., M.A.
Office 256 Richards Hall

Res. 44 Houston Ave., Milton

Registrar and Director of Co-operative Work

WINTHROP ELIOT NIGHTINGALE, A.B., S.B., Ed.M.
Office 254 Richards Hall

Res. 136 Dickerman Rd., Newton Highlands

Director of Student Activities

EDWARD SNOW PARSONS, S.B., Ed.M.
Office 355 Richards Hall

Res. 19 Hardy Ave., Watertown

Veterans' Co-ordinator

JOHN BUTLER PUGSLEY, A.B.
Office 252 Richards Hall

Res. 23 Hardy Ave., Watertown

Administrative Staff

A. RIAMA CRAWFORD Library, East Building	Assistant Librarian Res. 112 Bancroft Ave., Reading
DAISY MILNE EVERETT Office 115 Richards Hall	Assistant Comptroller Res. 1111 Highland Ave., Needham Heights
ALBERT WAYLAND FLETCHER, A.B. Office 154 Richards Hall	Co-ordinator of E.S.M.W.T. Res. 22 Pilgrim Rd., Arlington
MARY B. FOOR Office 41 Richards Hall	Manager of Bookstore Res. 32 Milton Rd., Brookline
MARION H. HANFORD Library, East Building	Assistant Librarian Res. 17 Symphony Rd., Boston
VERA LOUISE JENKINSON, S.B. Office 150 Richards Hall	Assistant Director of Admissions Res. 16 Lockeland Ave., Arlington
*DR. HENRY ARTHUR KONTOFF	College Physician Res. Overlook Park, Newton Centre
DR. GEORGE M. LANE Office 279 Marlborough St., Boston	College Physician Res. 21 Alton Court, Brookline
NATHAN LEVENSON Office 352 Richards Hall	Acting Director of Press Bureau Res. 5 Nazing Court, Roxbury
DONALD HERSHEY MacKENZIE, S.B., Ed.M. Office 154 Richards Hall	Co-ordinator of E.S.M.W.T. Res. 34 Exeter St., Wollaston
RUDOLF OSCAR OBERG, S.B., Ed.M. Office 139 Richards Hall	Director of Alumni Relations Res. 37 Walker St., Atlantic
DOROTHY SHERWOOD Library, East Building	Assistant Librarian Res. 20 Union Park, Boston
J. KENNETH STEVENSON, B.C.S. Office 136 Richards Hall	Assistant to the Vice-President Res. 101 Goden St., Belmont
GEORGE WESLEY TOWLE, S.B. Office 254 Richards Hall	Co-ordinator of Co-operative Work Res. 12 Forest St., Lexington
MYRA WHITE Library, East Building	Librarian Res. 118 Hemenway St., Boston
LOUISE GARDNER MARSH, S.B. Office 256 Richards Hall	Adviser to Women Students Res. 3 Pinckney St., Boston

*On Leave of Absence for War Service.

Day College Faculty

Professors

CHESTER PACKARD BAKER, S.B., M.A.

Professor of Chemical Engineering and Chairman of the Department

Office 1 New Building

Res. 31 Bow Rd., Newton Centre

CHARLES FREDERICK BARNASON, A.B., M.A., Ph.D.

Professor of Modern Languages and Chairman of the Department

Office 452 East Building

Res. 122 Downer Ave., Hingham

ROBERT BRUCE, B.C.S., M.C.S.

Professor of Accounting

Office 352 East Building

Res. 12 Elliott St., Winthrop

JOSEPH ARTHUR COOLIDGE, S.B., M.A.

Professor of Physics

Office 246 Richards Hall

Res. 20 Martin St., Cambridge

*ALFRED D'ALESSANDRO, B.C.S., LL.B., C.P.A., M.B.A. *Professor of Accounting*

*STANLEY GODDARD ESTES, A.B., M.A., Ph.D.

Professor of Psychology and Chairman of the Department

Office 256 Richards Hall

Res. 60 Pinckney St., Boston

ALFRED JOHN FERRETTI, S.B., M.S.

Professor of Mechanical Engineering

Office 75 Richards Hall

Res. 29 Coolidge Rd., Lynn

EMIL ANTON GRAMSTORFF, S.B., M.S.

Professor of Civil Engineering and Chairman of the Department

Office 101 South Building

Res. 19 Hilltop Ave., Lexington

ROGER STANTON HAMILTON, A.B., M.A., Ph.D.

Professor of Economics and Chairman of the Department

Office 363 East Building

Res. 1367 Walnut St., Newton Highlands

CHARLES WILLIAM HAVICE, A.B., M.A., S.T.B., Ph.D.

Professor of Sociology and Chairman of the Department

Office 357 Richards Hall

Res. 178 Goden St., Belmont

FREDERICK WILLIAM HOLMES, A.B., M.A.

Professor of English and Chairman of the Department

Office 453 East Building

Res. 43 Lincoln St., Dedham

WILFRED STANLEY LAKE, A.B., M.A., Ph.D.

Professor of Economics

Office 452 East Building

Res. 59 Hinckley Rd., Waban

HAROLD WESLEY MELVIN, A.B., M.A.

Professor of English

Office 256 Richards Hall

Res. 44 Houston Ave., Milton

STANLEY DEMETRIUS MIROYIANNIS, S.B., M.A., Ph.D.

Professor of Biology and Chairman of the Department

Office 424 New Building

Res. 8 Cumberland St., Boston

CARL FREDERICK MUCKENHOUPT, A.B., S.B., Ph.D.

Professor of Physics and Chairman of the Department

Office 245 Richards Hall

Res. 332 Winchester St., Newton Highlands

WINTHROP ELIOT NIGHTINGALE, A.B., S.B., Ed.M.

Professor of Co-ordination and Chairman of the Department

Office 254 Richards Hall

Res. 136 Dickerman Rd., Newton Highlands

EDWARD SNOW PARSONS, S.B., Ed.M.

Professor of Physical Education and Chairman of the Department

Office 355 Richards Hall

Res. 19 Hardy Ave., Watertown

ROLAND GUYER PORTER, B.E.E., M.S.

Professor of Electrical Engineering and Chairman of the Department

Office 12 South Building

Res. 19 Woodbury St., Beverly

JOHN BUTLER PUGSLEY, A.B.

Professor of Geology

Office 252 Richards Hall

Res. 23 Hardy Ave., Watertown

MILTON JOHN SCHLAGENHAUF, A.B., B.D., M.A.

Professor of Economics

Office 150 Richards Hall

Res. 96 Blakely Rd., Medford

*On Leave of Absence for War Service.

- WILLIAM LINCOLN SMITH, S.B., Eng.D. *Professor of Electrical Engineering*
Office 11 South Building Res. 4 Academy Lane, Concord
- JOSEPH SPEAR, A.B., M.A. *Professor of Mathematics and Chairman of the Department*
Office 325 Richards Hall Res. 31 Matchett St., Brighton
- ELIOT FRANKLIN TOZER, S.B. *Professor of Drawing and Chairman of the Department*
Office 451 Richards Hall Res. 22 Devon Ave., Beverly
- ARTHUR ANDREW VERNON, S.B., M.S., Ph.D. *Professor of Chemistry and Chairman of the Department*
Office 425 Richards Hall Res. 14 Standish St., Newton Highlands
- JOSEPH WILLIAM ZELLER, S.B., M.E. *Professor of Mechanical Engineering and Chairman of the Department*
Office 75 Richards Hall Res. 282 Concord St., Framingham

Associate Professors

- *WILLIAM THURLOW ALEXANDER, S.B., M.A. *Associate Professor of Industrial Engineering and Chairman of the Department*
CHARLES OSCAR BAIRD, JR., S.B., M.S. *Associate Professor of Civil Engineering*
Office 101 South Building Res. 17 Manning Rd., Lynn
- LAURENCE FULLER CLEVELAND, S.B., M.S. *Associate Professor of Electrical Engineering*
Office 13 South Building Res. 24 Fairfield St., Newtonville
- ELMER ELLSWORTH HASKINS, S.B., M.A., Ph.D. *Associate Professor of Mathematics*
Office 325 Richards Hall Res. 53 Damien Rd., Wellesley Hills
- REGINALD GAGE LACOUNT, S.B., M.A., Ph.D. *Associate Professor of Physics*
Office 246 Richards Hall Res. 11 Cleveland Rd., Wellesley
- WALDEMAR STANWOOD MCGUIRE, S.B., M.A. *Associate Professor of Chemistry*
Office 425 Richards Hall Res. 33 Samoset Ave., Quincy
- *GEORGE HARRIS MESERVE, JR., S.B., Ed.M. *Associate Professor of Drawing*
*RUDOLPH MAGNUS MORRIS, S.B., Ed.M. *Associate Professor of Education*
*NORRIS WHITFIELD POTTER, JR., A.B., M.A., Ph.D. *Associate Professor of History and Government and Acting Chairman of the Department*
- *HENRY EDWARD RICHARDS, S.B., M.S. *Associate Professor of Electrical Engineering*
FREDERICK ARLINGTON STEARNS, S.B., M.S. *Associate Professor of Mechanical Engineering*
Office 75 Richards Hall Res. 66 Florence Ave., Melrose
- GEORGE WESLEY TOWLE, S.B. *Associate Professor of Co-ordination*
Office 254 Richards Hall Res. 12 Forest St., Lexington
- *ALBERT EDWARD WHITTAKER, S.B., Ed.M. *Associate Professor of Mechanical Engineering*

Assistant Professors

- *WAYLAND SOLON BAILEY, S.B., M.S., *Assistant Professor of Mechanical Engineering*
*WILLIAM THOMAS CLONEY, JR., A.B. *Assistant Professor of English*
*OTIS F. CUSHMAN, S.B., M.S. *Assistant Professor of Drawing*
*ELMER HENRY CUTTS, A.B., M.A., Ph.D. *Assistant Professor of History and Government*
- JOHN JAMES DEVINE, S.B., Sc.M. *Assistant Professor of Drawing*
Office 451 Richards Hall Res. 29 Jeanette Ave., Belmont
- NORMAN ARMIN DUBOIS, S.B., M.A., Ph.D. *Assistant Professor of Chemistry*
Office 425 Richards Hall Res. 1200 Great Plain Ave., Needham

*On Leave of Absence for War Service.

- ALBERT ELLSWORTH EVERETT, S.B., M.B.A. Assistant Professor of Co-ordination
Office 154 Richards Hall Res. 4 Crown St., Auburndale
- GEORGE RAYMOND FENNELL, S.B., M.B.A. Assistant Professor of Marketing
Office 153 Richards Hall Res. 42 Fremont Ave., Everett
- *FREDERICK ROBERT HENDERSON, S.B., M.S. Assistant Professor of Industrial Engineering
Assistant Professor of Physics
- CARL DAVID JOHNSON, A.B., M.A. Res. 24 Lunt St., Norfolk Downs
Office 246 Richards Hall Assistant Professor of Chemistry
- WILLIAM FAY LUDER, A.B., Ph.D. Res. 27 Kirkland Circle, Wellesley
Office 425 Richards Hall Assistant Professor of Chemistry
- DONALD HERSHEY MACKENZIE, S.B., Ed.M. Res. 34 Exeter St., Wollaston
Office 154 Richards Hall Assistant Professor of English
- EVERETT CARTER MARSTON, A.B., M.A. Res. 40 Hereward Rd., Newton Centre
Office 355 Richards Hall Assistant Professor of Modern Languages
- ANTONIO LIBERTO MEZZACAPPA, A.B., M.A., Ph.D. Res. 121 Mt. Vernon St., Arlington
Office 452 East Building Assistant Professor of Chemical Engineering
- JOHN CHRISTIE MORGAN, S.B., M.B.A. Res. 24 Walker St., Newtonville
Office 1 New Building Assistant Professor of Electrical Engineering
- GEORGE EVERETT PIHL, S.B., M.S. Res. 40 Bourneedale Rd., Jamaica Plain
Office 14 South Building Assistant Professor of Sociology
- WILLIAM JOHN PINARD, A.B., M.A., Ed.M., Ph.D. Res. 97 Francis St., Brookline
Office 246 Richards Hall Assistant Professor of Economics
- *CHARLES MCKINLEY RAMSAY, A.B., M.A. Assistant Professor of Physical Education and Head Coach of Track
Office 355 Richards Hall Res. 52 Oakland St., Medford
- GERALD RUSSELL TATTON, S.B., M.B.A. Assistant Professor of Physics
Office 355 Richards Hall Res. 52 Oakland St., Medford
- *THOMAS HOMKOWYCZ WALLACE, S.B., M.A., Ph.D. Assistant Professor of Physics
*GEORGE BAKER WELCH, S.B., Ph.D. Assistant Professor of Physics
- *CHESTER HENRY WOLOWICZ, S.B., M.S. Assistant Professor of Mechanical Engineering
Assistant Professor of Chemistry
- SAVERIO ZUFFANTI, S.B., M.A. Res. 29 Newbury Ave., Quincy
Office 425 Richards Hall

Instructors

- FLETCHER S. BOIG, S.B., M.S., Ed.M. Instructor in Chemistry
Office 425 Richards Hall Res. 112 Quincy Shore Drive, Quincy
- *EARL KENNETH BOWEN, S.B., M.A. Instructor in Mathematics
WILFRED JAMES COMBELLACK, A.B., M.A. Instructor in Mathematics
Office 325 Richards Hall Res. 108 Jersey St., Boston
- *EDWARD MARKS COOK, A.B. Instructor in Mathematics
*LOUIS COOPERSTEIN, A.B., M.A. Instructor in Modern Languages
WARREN CLIFTON DEAN, A.B., M.A. Instructor in Mathematics
Office 325 Richards Hall Res. 213 Jackson St., Newton Centre
- *JAMES WILLIAM DUNN, A.B. Instructor in Physical Education and Head Coach of Football and Basketball
CHARLES P. ENGELHARDT, JR., S.B., M.Arch. Instructor in Drawing
Office 451 Richards Hall Res. Otis St., Bedford
- *MARTIN WHITE ESSIGMANN, S.B. Instructor in Electrical Engineering
*HARRY FERGUSON, S.B. Instructor in Mathematics
ALFRED WAYLAND FLETCHER, A.B. Instructor in Co-ordination
Office 154 Richards Hall Res. 22 Pilgrim Rd., Arlington

*On Leave of Absence for War Service.

EMANUEL ARTHUR FLUMERE, A.B.	Instructor in Physical Education
Office 355 Richards Hall	Res. 17 Hemenway St., Boston
WARREN LINCOLN GANONG, S.B.	Instructor in Industrial Engineering
Office 100 South Building	Res. 24 Lexington Ave., Needham Heights
*JOSEPH MANUEL GOLEMME, S.B., M.A.	Instructor in Accounting
GEORGE WILLIAM HANKINSON, A.B., S.B.	Instructor in Physics
Office 101 South Building	Res. 574 Huntington Ave., Boston
WILLIAM CARL HULTGREN	Instructor in Physical Education
Office, Gymnasium, East Building	Res. 80 Woodside Rd., Winchester
*LYMAN ALBERT KEITH, S.B., M.A.	Instructor in Industrial Administration
LOUISE GARDNER MARSH, S.B.	Instructor in Physics
Office 256 Richards Hall	Res. 3 Pinckney St., Boston
*FRANKLIN NORVISH, S.B., M.A.	Instructor in English
*EUGENE GEORGE PARÉ, S.B., Ed.M.	Instructor in Drawing
*ELLIS MERTON PURINTON, B.B.A.	Instructor in Co-ordination
*GUSTAV ROOK, S.B.	Instructor in Drawing
*ALBERT EDWARD SANDERSON, JR., S.B.	Instructor in Civil Engineering
*DUNCAN WIGHT SEAVEY, S.B., M.S.	Instructor in Mechanical Engineering
*EBEN O. SMITH, S.B.	
	Instructor in Economics and Co-ordinator of Co-operative Work
ERNEST LINCOLN SPENCER, S.B., M.S.	Instructor in Civil Engineering
Office 101 South Building	Res. 58 South St., Medfield
SAMUEL ARTHUR STONE, S.B., M.S.	Instructor in Mathematics
Office 325 Richards Hall	Res. 6 Autumn St., Roxbury
WILLIAM WALLACE, S.B.	Instructor in Mathematics
Office 325 Richards Hall	Res. 33 Richardson Rd., Melrose

Laboratory Assistants

DOROTHY HARTIGAN	
Office 246 Richards Hall	Res. 15 Albright St., West Roxbury
ESTHER L. KELLEY	
Office 425 Richards Hall	Res. 126 Union St., Bridgewater
JOAN MOTLEY	
Office 14 South Building	Res. 65 Main St., Concord
SUMIKO YATSUHASHI	
Office 425 Richards Hall	Res. 66 Beals St., Brookline

*On Leave of Absence for War Service.

Faculty Committees

General

WILLIAM C. WHITE, *Chairman*

ROBERT BRUCE
GEORGE R. FENNELL
WILFRED S. LAKE
HAROLD W. MELVIN

WINTHROP E. NIGHTINGALE
EDWARD S. PARSONS
JOHN B. PUGSLEY
MILTON J. SCHLAGENHAUF

Executive

HAROLD W. MELVIN, *Chairman*

ROBERT BRUCE
WILFRED S. LAKE

WINTHROP E. NIGHTINGALE
EDWARD S. PARSONS

JOHN B. PUGSLEY

Day College Council

WILLIAM C. WHITE, *Chairman*

GEORGE R. FENNELL, *Secretary*

CHESTER P. BAKER
CHARLES F. BARNASON
ROBERT BRUCE
ALFRED D'ALESSANDRO
EMIL A. GRAMSTORFF
ROGER S. HAMILTON
CHARLES W. HAVICE
FREDERICK W. HOLMES
WILFRED S. LAKE
HAROLD W. MELVIN

STANLEY D. MIROYIANNIS
CARL F. MUCKENHOUP
WINTHROP E. NIGHTINGALE
EDWARD S. PARSONS
ROLAND G. PORTER
JOHN B. PUGSLEY
MILTON J. SCHLAGENHAUF
JOSEPH SPEAR
ELIOT F. TOZER
ARTHUR A. VERNON

JOSEPH W. ZELLER

Student Activities

EDWARD S. PARSONS, *Chairman*

ROGER S. HAMILTON
DONALD H. MACKENZIE

JOSEPH SPEAR
ELIOT F. TOZER

Graduate Study

ARTHUR A. VERNON, *Chairman*

WILFRED S. LAKE

STANLEY D. MIROYIANNIS
CARL F. MUCKENHOUP

Office and Secretarial Staff

MABEL ELLEN BEAN	61 Quint Ave., Allston
Secretary to the Assistant to the Vice-President—136R	
CORA LOUISE BERRY	52 St. Paul St., Brookline
Clerk, Admissions Office—151R	
FRANCES GLASGOW BISHOP	1036 High St., Westwood
Cashier, Central Offices of the University	
PHYLLIS EVELYN BREAD	21 Second St., Medford
Secretary, Student Union Office—357R	
MURIEL MARIE CHAISSON	12 Cumberland St., Boston
Secretary, E.S.M.W.T. Office—154R	
PHYLLIS ANN COTTON	15 Park Vale, Brookline
Clerk, Admissions Office—151R	
MARY FRANCES CRAIG	343 Pleasant St., Milton
Secretary to the Dean of Students—256R	
VIRGINIA CUSHING DARLING	128 Chestnut St., Boston
Secretary and Purchasing Clerk, Comptroller's Office	
THELMA GERTRUDE DUNN	30 Freeman Place, Needham
Bookkeeper, Comptroller's Office	
ALICE MARIE FRAZER	124 Pleasant St., Winthrop
Secretary, E.S.M.W.T. Office—154R	
MILDRED CURTIS GARFIELD	87 St. Stephen St., Boston
Financial Secretary to the Director of Day Colleges—152R	
EDNA JANE GARRABRANT	8 Maynard St., Arlington
Secretary to the Director of Co-operative Work—254R	
CAROLINE HILL	24 Washington St., Beverly
Recorder, Registrar's Office—254R	
ELIZABETH HARRIETT HOWARD	50 Tyler St., North Quincy
Statistical Clerk, Central Offices of the University	
DOROTHY DELL HUGG	1980 Commonwealth Ave., Brighton
Information Clerk, Central Offices of the University	
ELIZABETH ANNE MACDONALD	183 Strathmore Rd., Brighton
Secretary to the Director of Admissions	
JULIA HARRIET MASLEN	176 Winthrop Rd., Brookline
Secretary to the President—184R	
DOROTHY MILNE MURRAY	204 Fair Oak Park, Needham
Secretary, E.S.M.W.T. Office—154R	
ALYCE ANN NICHOLS	507 Chestnut St., Needham
Bookkeeper, Comptroller's Office	
CLAIRE M. PALMER	98 Charles St., Boston
Secretary to the Director of Alumni Relations—139R	
DOROTHY L. PEPPARD	7 Gray Circle, Arlington
Secretary to the Director of Student Activities—355R	
ELIN VICTORIA PETERSON	86 Callender St., Dorchester
Secretary to the Vice-President—138R	
CAROLINE FRANCES PETTINGELL	1654 Massachusetts Ave., Cambridge
Bookkeeper, Registrar's Office—254R	
MARJORIE GRAFFTE PROUT	1179 Boylston St., Boston
Secretary to the President—184R	
MADelyn EDYTHE RALPH	42 Sylvan Circle, Lynnfield
Secretary to the Director of Day Colleges—152R	
ELEANOR ROSS	5 Newcastle Rd., Brighton
Secretary to the Registrar—254R	
EVA LILLIAN ROSS	145 Day St., Auburndale
Bookkeeper, Comptroller's Office	

Convocation Lecturers

LEVERETT SALTONSTALL

Governor of the Commonwealth
"Massachusetts at War"

ROBERT P. TRISTRAM COFFIN

Author, Lecturer
"What Poems Are"

J. ANTON DE HAAS

Professor of International Relationships, Harvard University
"The Outlook for 1944"

CHANNING H. COX

President, Old Colony Trust Company
"Target for Tonight"

JOSEPH W. BARKER

Special Assistant to the Secretary of the Navy
"Today and Tomorrow"

ALEXANDER LOUDEN

Netherlands Ambassador
"The Kingdom of the Netherlands at War"

G. BROMLEY OXNAM

Bishop, Methodist Church
"A Date with the World"

LUIS QUINTANILLA

Minister Counselor of the Mexican Embassy
"Pan Americanism"

GEORGE H. EDGELL

Director, Boston Museum of Fine Arts
"Recent Museum Accessions"

GEORGE A. BUTTRICK

Minister, Madison Avenue Presbyterian Church, N. Y. C.
"The Modern Rip Van Winkle"

MORDECAI W. JOHNSON

President, Howard University
"A Great Adventure in Healing"

CHANNING POLLOCK

Playwright, Author
"Is the Fault in Our Stars?"

WILLIAM E. WICKENDEN

President, Case School of Applied Science
"The Second Mile"

WILLIAM G. AVIRETT

Education Editor, New York Herald Tribune
"Education and the News"

ROBERT BELLAIRE

Former United Press Bureau Chief in Tokyo
"The Jap Victory Plan"

Chapel Preachers

REVEREND LEE D. BERGSMAN
Associate Minister, Old South Church

REVEREND DR. EDWIN P. BOOTH
Head of Department of New Testament, Boston University

REVEREND GEORGE A. BUTTERS
Pastor, Immanuel Methodist Church, Waltham

DR. HOWARD J. CHIDLEY
Minister, First Congregational Church, Winchester

RABBI BERYL D. COHON
Rabbi, Temple Sinai, Boston

REVEREND WALTON E. COLE
Minister, Second Church, Boston

REVEREND DR. RALPH W. DECKER
Minister, Parkman Street Methodist Church, Dorchester
Professor of New Testament and Religious Education, Boston University

REVEREND DR. FRANK E. DUDDY
Minister, North Cambridge Congregational Church, Cambridge

DR. CARL S. ELL
President, Northeastern University, Boston

REVEREND DR. F. GERALD ENSLEY
Minister, The United Church, Norwood

REVEREND HAMILTON M. GIFFORD
Minister, Newtonville Methodist Church, Newtonville

REVEREND DR. HOBART F. GOEWY
Minister, Harvard-Epworth Methodist Church, Cambridge

DR. CHARLES W. HAVICE
Dean of Chapel, Northeastern University, Boston

FATHER KENNETH DEP. HUGHES
Minister, St. Bartholomew Church, Cambridge

DR. FRANK JENNINGS
Executive Secretary, Massachusetts Council of Churches, Boston

REVEREND J. FRANKLIN KNOTTS
Minister, Saint John's Methodist Church, East Dedham

REVEREND CARL H. KOPF
Minister, Mt. Vernon Church, Boston

REVEREND FREDERIC C. LAWRENCE
Rector, St. Paul's Episcopal Church, Brookline

REVEREND DR. ASHLEY D. LEAVITT
Minister, Harvard Congregational Church, Brookline

Chapel Preachers

DR. ELMER A. LESLIE

Professor of Hebrew and Old Testament Literature, Boston University

RABBI JOSHUA L. LIEBMAN

Rabbi, Temple Israel, Boston

DR. SAMUEL M. LINDSAY

Minister, First Baptist Church, Brookline

REVEREND DR. CHARLES M. McCONNELL

Professor of Town and Country Church, Boston University School of Theology

REVEREND DR. JOSEPH L. McCORISON

Former President of Yankton College

Regional Director of National Conference of Christians and Jews

REVEREND SAMUEL H. MILLER

Minister, Old Cambridge Baptist Church, Cambridge

DR. PHILLIPS E. OSGOOD

Minister, Emmanuel Church, Boston

BISHOP G. BROMLEY OXNAM

Resident Bishop of the Boston Area of the Methodist Church

REVEREND PRENTISS L. PEMBERTON

Minister to Baptist Students in Greater Boston

REVEREND JAMES H. PERKINS

Associate Minister, Old South Church, Copley Square, Boston

REVEREND DR. PALFREY PERKINS

Minister, King's Chapel, Boston

PROFESSOR WARREN T. POWELL

Director of Student Counseling and Religious Activities, Boston University

DR. RUSSELL H. STAFFORD

Minister, Old South Church, Boston

THE REVEREND EDMUND A. STEIMLE

Pastor, the University Lutheran Church, Cambridge

DR. WILLIAM L. STIDGER

Professor of Homiletics, Boston University

NORTHEASTERN UNIVERSITY

General Statement

NORTHEASTERN UNIVERSITY is incorporated as a philanthropic institution under the General Laws of Massachusetts. The State Legislature, by special enactment, has given the University general degree granting powers.

The Corporation of Northeastern University consists of men who occupy responsible positions in business and the professions. This Corporation elects from its membership a Board of Trustees in whom the control of the institution is vested. The Board of Trustees has four standing committees: (a) an Executive Committee which serves as an Ad Interim Committee between the regular meetings of the Board of Trustees and has general supervision of the financial and educational policies of the University; (b) a Committee on Housing which has general supervision over the buildings and equipment of the University; (c) a Committee on Funds and Investments which has the responsibility of administering the funds of the University; (d) a Development Committee which is concerned with furthering the development plans of the University.

Founded in 1898, Northeastern University, from the outset, had as its dominant purpose the discovery of human and social needs and the meeting of these needs in distinctive and highly serviceable ways. While subscribing to the most progressive educational thought and practice, the University has not duplicated the programs of other institutions but has sought "to bring education more directly into the service of human needs."

With respect to program, Northeastern has limited itself:

- To offering, in its several schools, basic curricula from which non-essentials have been eliminated,
- To effective teaching,
- To advising and guiding students,
- To giving students the chance to build well-rounded personalities through a balanced program of extra-curricular activities.

The Northeastern Plan of Education is especially designed for the student who must earn while he learns. In the main, it consists of two definite types of education:

- Co-operative Education by Day,
- Adult Education by Night.

The plan has been developed in such a way that experience in jobs with pay is utilized to help boys of limited financial resources secure an education and at the same time gain the maximum

educational benefit from their practical experience. So far as the New England States are concerned, Northeastern University is the only institution whose day colleges, other than the School of Law, are conducted under the Co-operative Plan.

The several schools and programs of the University are operated either under the name "Northeastern University" or by its affiliated schools—the Lincoln Schools and The Huntington Day School for Boys. The following is a brief outline of the principal types of educational opportunities offered.

1. In the field of Co-operative Education there are three day colleges—the College of Liberal Arts, the College of Engineering, and the College of Business Administration. All of these colleges are co-educational and offer five-year curricula. The College of Liberal Arts offers majors in the usual fields of the arts and the sciences leading to the degree of Bachelor of Arts and Bachelor of Science. The College of Engineering, one of the largest engineering colleges in the United States, has curricula in Civil, Mechanical (with Aeronautical option), Electrical, Chemical, and Industrial Engineering. The College of Business Administration has curricula in Accounting, Marketing and Advertising, and Industrial Administration. The College of Engineering and the College of Business Administration confer the degree of Bachelor of Science with specification indicating the field of specialization. The Co-operative Plan under which all of these day colleges operate enables the student to alternate regular periods of classroom instruction with supervised employment in an industrial or commercial position, thus combining theory and practice in an exceedingly effective manner. Apart from the educational advantages of the Co-operative Plan is the opportunity for self-support while the student is pursuing his studies at Northeastern University. During the co-operative periods, students not only gain experience but are also paid for their services. Approximately three hundred business and industrial concerns co-operate with Northeastern University in making this program effective.
2. The School of Law conducts both a day and an evening undergraduate program, each program preparing for admission to the bar and for the practice of the law and leading to the degree of Bachelor of Laws.
3. The Adult Education Program has been developed in the evening work of the School of Law as indicated above, in the School of Business, and in the evening courses of the College of Liberal Arts. The School of Business has curricula in Management, Accounting, and Engineering and Management. The School awards the Bachelor of Business Administration degree with specification. A division of the School of Business is also

conducted in Springfield. The College of Liberal Arts offers certain of its courses constituting a program, three years in length, the equivalent in hours to one-half of the requirements for the A.B. or S.B. degree, providing a general education and preparation for admission to the School of Law. The title of Associate in Arts is conferred upon those who complete this program.

4. The Adult Education Program has also been developed through the Lincoln Schools, which are affiliated with and conducted by Northeastern University. The classes in these schools are held at convenient evening hours. The Lincoln Technical Institute offers curricula upon a college level in various phases of engineering leading to the title of Associate in Engineering; whereas the Lincoln Preparatory School, accredited by the New England College Admissions Board, prepares students for admission to college and offers other standard high school programs.
5. The Huntington Day School for Boys, also affiliated with and conducted by Northeastern University, is the outgrowth of a demand in the city of Boston for an urban preparatory school with high educational standards which would furnish thorough preparation for admission to the leading colleges and universities. While easily accessible to the various sections of Boston and to the suburbs, it has the facilities of a country day school and offers a country day school program. This School is one of the leading preparatory schools of the country.

Buildings and Facilities

Boston — A Great Educational Center

The fact that Northeastern University is in Boston broadens the educational and cultural opportunities of its students. Few other cities in the country are so rich in the finest elements of American life. Many of its historic buildings, such as the Old State House, Faneuil Hall, and the Old North Church, have become museums for the preservation of old documents, paintings, and other collections representative of early Colonial life. The Boston Public Library and the Museum of Fine Arts, both within a few blocks of the University Buildings, are widely noted for their treasures of literature and art. Even nearer to the University is Symphony Hall, home of the world-famous Boston Symphony Orchestra. And the many churches within Greater Boston not only afford the opportunity of hearing distinguished preachers but through their student clubs and young people's societies make possible for students a fine type of social and intellectual life.

University Buildings

Location

Northeastern University, except for the Law School, is housed in four buildings located on Huntington Avenue, Boston, at the end of the Huntington Avenue Subway and opposite the historic Boston Opera House. The main administrative offices of the University are located in Richards Hall, a four-story brick structure added to the physical plant of Northeastern in 1938.

The chief railroad centers of Boston are the North and South Stations. To reach the University from the North Station, board a car going to Park Street, at which junction transfer to any Huntington Avenue car. To reach the University from the South Station, board a Cambridge subway train for Park Street Under. There go up one flight of stairs and board any Huntington Avenue car.

East Building

The East Building serves as headquarters for the College of Business Administration. In addition, it houses the University Library, the Business Administration Laboratory, and several department offices. Jacob P. Bates Hall is also in this building. The latter is used for University band and orchestra rehearsals, glee club rehearsals, and entertainments, as well as dramatic club work.

South Building

The South Building, located directly behind the East Building, houses the following laboratories: Time and Motion Study, Hydraulics and Sanitary Engineering, Concrete and Highway, and Electrical Measurements and Dynamo Laboratories. In addition, it provides space for department offices, classrooms, conference rooms and one large drafting room.

Richards Hall

Richards Hall is the first unit of the new Northeastern plant. Its 100,000 square feet of floor area provide ample space for administrative offices, the Bookstore, Student Union reading and game rooms, Chapel, and many other facilities.

The major portion of the building is given over to laboratories and classroom areas. Laboratory space is provided for the following: Mechanical Engineering, General and Advanced Physics, Inorganic, Organic, Analytical, and Physical Chemistry, together with several special research laboratories.

Outstanding among the classroom areas are a large chemistry lecture hall and two large classrooms seating 300 and 200 students respectively. On the fourth floor are located three large, light and well-equipped drawing rooms, together with an art room for carrying on designing and drafting which form so important a part of technical work. The penthouse contains a radio laboratory, astronomy laboratory, and a blueprint room.

New Building

The New Building is the second unit of the proposed Northeastern plant. It has a basement and four stories housing laboratories, classrooms and a recreation area, the *University Commons*. Chemical engineering laboratories and classrooms take up the entire basement. The second floor contains a large lecture hall and classrooms. The Advertising Laboratory and classrooms take up the entire third floor. The fourth floor is given over almost entirely to the biological laboratories and biology lecture room.

Beacon Hill Building

The building housing the Law School at 47 Mt. Vernon Street is a three-story structure completely equipped with administrative offices, faculty offices, classrooms, library and student recreational rooms. The interior of this building is both commodious and new, the entire structure having been recently remodeled by the University.

Laboratories

The laboratories of the University fall into three categories. The first group includes those for experimental work in the pure sciences of biology, chemistry, and physics. The second includes those for the study of engineering in its major branches (civil, mechanical, electrical, chemical, and industrial). The third comprises the business and statistical laboratory.

In addition to these laboratory facilities which are described in the following pages, motion pictures and lantern slides are frequently used to supplement classroom instruction. For this purpose, there are available motion picture projectors for both sound and silent film as well as several lantern slide projectors.

Biology

The Department of Biology occupies the fourth floor of the New Building, which contains, in addition to the Zoological, Anatomical and Botanical Laboratories, its offices, research areas, and lecture hall. The laboratories are fully equipped for general and special work, with extensive collections of museum preparations, models, and specimen collections displaying thousands of specimens illustrating the various fields of biological study.

Chemistry

The Chemical Laboratories located on the fourth floor of Richards Hall were given to the University by the Charles Hayden Foundation. They are splendidly equipped for work in general and inorganic chemistry, qualitative and quantitative analysis, and organic and physical chemistry. In addition, several service rooms and space for a limited amount of research are provided.

General Chemistry and Qualitative Analysis

This laboratory is fully equipped with water, gas, electricity, steam, and fume hoods. A hydrogen-sulphide room, a balance room, and a conference room are also a part of this unit.

Organic Chemistry

This laboratory provides about six feet of working space for each student. The facilities are similar to those in the general chemistry laboratory and, in addition, there is provided a large evaporating unit and an organic combustion furnace.

Quantitative Analysis and Physical Chemistry

The tables and fume hoods and other equipment in this room are similar to those in the Organic Laboratory. In addition, a large drying oven, special balances, electrical instruments, tempera-

ture measuring devices, and other specialized apparatus are provided.

A small laboratory for technical analysis of such materials as coal, vegetable oils, petroleum, textiles, and rubber adjoins the main laboratory, and a special laboratory is also available for electrolytic work.

Research

Three small laboratories are equipped for advanced research. These are available for graduate thesis investigations.

Physics

The Physics Laboratories located on the second floor of Richards Hall are fully equipped for elementary and advanced study as well as research. In addition, an astronomy laboratory and a radio laboratory are located in the penthouse on Richards Hall.

General

This laboratory, designed for elementary instruction, is provided with gas, water, and electricity. A spectrometer room, a photographic room, and a photometer room are directly connected with this laboratory. Sufficient apparatus is available so that ordinarily students may work alone on most experiments.

A second smaller laboratory is equipped for more specialized experiments, and has facilities for glass blowing and high vacuum work. A flexible electrical system here permits use of all the supplies available to the Advanced Laboratory.

Advanced

This laboratory is designed with a view to both precision and flexibility. A special switchboard provides single phase and polyphase alternating current and a variety of direct current potentials. A workshop with lathe, drill press, grinder, and other tools as well as two separate research rooms complement the laboratory. A large number of special instruments plus considerable auxiliary apparatus give a well-rounded supply of equipment for advanced study and research.

Astronomy and Radio

The astronomy laboratory is provided with equipment for grinding mirrors and constructing telescopes, and a platform on the roof provides a very good unobstructed view for making observations.

The radio laboratory is a completely shielded room and houses the amateur transmitting station which operates on both radio-telephone and radiotelegraph. Facilities are also available for research.

Psychology

The Psychology Laboratory, located on the third floor of Richards Hall, is equipped for the observation of reacting human beings under controlled conditions. Equipment consists of instruments for measuring and controlling factors involved in perception, memory, and learning, and of psychometric devices for the testing and evaluation of individual abilities.

Civil Engineering

Most of the laboratory work in civil engineering is, of course, actual field work in surveying. A considerable amount of demonstration equipment including many models is available for use in the study of structures, hydraulics, sanitary engineering, highways, concrete and soil mechanics.

Surveying

The Department of Civil Engineering is provided with a variety of excellent and up-to-date equipment for field work. The instruments have been chosen to make possible the working out of advanced as well as elementary field problems, and to acquaint the students with the principal makes and types of instruments in general use.

Hydraulics and Sanitary Engineering

This laboratory located on the first floor of the South Building is equipped with demonstration measuring devices for use in connection with the courses in hydraulics.

Complete equipment is also provided for water and sewage analysis, and research students can be accommodated in this field.

Concrete and Highway Engineering

Located on the second floor of the South Building, this laboratory is equipped for conducting all the routine tests on cement and aggregate. The 300,000 lb. Riehle testing machine in the Mechanical Engineering Department is available for compression tests on concrete cylinders.

Equipment is also available for conducting a major portion of the accepted tests on bituminous materials as used in highway work. Soil Mechanics equipment consists of a general soil sampler, consolidometer, wet-mechanical gram-size analysis and a quicksand demonstration tank.

Aerial Photogrammetry

The apparatus in this laboratory may be used to instruct the students in the basic principles of photogrammetry, or may be used to instruct the students in the more technical phases of photogrammetry such as horizontal control, vertical control, stereoscopic plotting, mechanical triangulation, and the tri-metrogon method of plotting.

Mechanical Engineering

The Mechanical Engineering Department has a suite of well-equipped laboratories containing a large variety of modern machines and occupying over 10,000 square feet of floor space in the basement of Richards Hall. Special areas have been set aside and equipped for oil testing, concrete mixing, mechanics research, and similar purposes. Auxiliary equipment is, of course, available for making all the usual tests and measurements.

Steam Power

This equipment includes a wide variety of steam engines, turbines, pumps, heat exchangers, and measuring instruments.

The auxiliary steam power plant operated by the University and the Boston Y.M.C.A. is also used for testing purposes. This plant consists of four horizontal return tubular boilers, two burning coal and two burning fuel oil. These feed three reciprocating steam engines and one turbine which in turn drive four direct current generators.

Internal Combustion and Aeronautics

The internal combustion equipment includes a number of gas and oil, automobile, airplane, and Diesel engines. Most of these are set up for running experimental tests, but several are available for dismantling and demonstration purposes.

In addition to the study of airplane engines, the laboratory is equipped with a small wind tunnel for experimental work in aerodynamics.

Refrigeration, Heating, and Air Conditioning

Included under this heading are an ammonia refrigerating machine, a constant temperature room equipped for either heating or cooling, and a large air conditioner unit.

Testing Materials and Heat Treatment

For tension, compression, bending, and shearing tests, the laboratory is equipped with a 300,000 lb. capacity Riehle and a 50,000 lb. capacity Olsen, as well as several smaller testing machines. For other tests the laboratory has cement testers, torsional testing machines, impact testers, fatigue testers, hardness testers, extensometers, oil testing equipment calorimeters, as well as instruments for measuring speed, vibration, temperatures, pressures and flow of fluids.

For heat treatment studies an electric furnace and a gas fired furnace are available. Equipment magnifying up to 2600 diameters is available for photographing crystalline structures, and the laboratory has polaroid equipment for photoelastic stress analysis.

Machine Shop

Adjoining the laboratory is a machine shop fully equipped with machine tools, welding equipment, and a small forge.

Electrical Engineering

The basement of the South Building is occupied by the electrical laboratories. These cover an area of approximately 7,800 square feet and include the dynamo, measurements, high tension, electronics and communication laboratories.

Dynamo

This laboratory is provided with both 60 cycle 3 phase 230 volt alternating current and 115-230 volt three-wire direct current. The equipment includes more than sixty motors and generators of different types together with the necessary auxiliary equipment to operate and test them. The motors and generators have been selected so as to reduce as much as possible the risk from high voltage while making available to the students a representative range of commercial apparatus.

Electrical Measurements

The equipment here is of two distinct types: first, that planned primarily for teaching principles of measurement and, secondly, that which is used in teaching advanced standardizing methods as well as for calibrating instruments in other laboratories of the University. Briefly, this laboratory is equipped for practically any work in electrical measurements except for the absolute determinations carried on in national standardizing laboratories.

High Tension

This laboratory is equipped with the necessary transformers and auxiliary equipment to provide 4 Kva. at 50,000 volts potential. A special room has been equipped for cable and insulation testing, and impulse testing of insulation is made possible by a surge generator capable of producing waves having crest values up to 300,000 volts. A 4,000 ampere low voltage transformer is also available for the study of the effects of heavy currents in conductors, switches, and contacts.

Electronics and Communications

This laboratory is equipped with apparatus for about forty odd experiments in the field of Electronics, Networks, Radio Engineering and Ultra-High-Frequency Technique. The laboratory facilities are designed to cover all the experiments outlined in the second M. I. T. Conference on Ultra-High-Frequency Technique.

Chemical Engineering

The Department is now located on the ground floor of the New Building. A total of 8,218 square feet has been allotted for its exclusive use.

Unit Operations Laboratory

This laboratory is primarily devoted to the study of flow of fluids, filtration, heat transfer, distillation, evaporation, absorption, and drying; but houses in addition equipment for carrying out such unit processes as nitration, reduction, fusion, and sulphonation.

Approximately 1,000 square feet of this laboratory consists of a double floor area serviced by a traveling crane for installing and repairing semi-plant scale equipment.

Crushing, Grinding and Separation Laboratory

A separate laboratory equipped with a ventilating fan houses equipment for crushing, pulverizing, and separating solids. All equipment is operated by individual electric motors with speed control frequently taken advantage of to get experimental data.

Machine Shop

A small, well equipped shop is available for the construction and repair of equipment.

Research Space

In addition to the Research Laboratory, the mezzanine floor of the Unit Operations Laboratory is available for investigating new processes.

Industrial Chemical Laboratory

This laboratory is equipped with modern laboratory benches and is located next to the stock room. The determination of the optimum conditions for carrying out unit processes on a small scale is accomplished in this laboratory.

Industrial Engineering

Students in the Department of Industrial Engineering share in the use of the Mechanical Engineering Laboratories and the Business Laboratory. The Industrial Engineering Laboratory itself is located on the first floor of the South Building and is devoted exclusively to methods engineering (motion and time study work).

Methods Engineering

This laboratory is completely equipped with the latest facilities and tools used by methods engineers. Besides the general equipment consisting of benches, tables, lathe, jigs, fixtures, and racks,

the laboratory has an ample supply of time study boards, stop watches and timers for time study work. There is also available complete motion picture equipment and microchronometers for micromotion work.

Design and Drafting Rooms

The University possesses large, light, and well-equipped drawing rooms for the carrying on of the designing and drafting which form so important a part of engineering work. These rooms are supplied with lockers containing the drawing supplies, files containing blueprints, and photographs of machines and structures that represent the best practice. Drafting room blackboards are equipped with traveling straightedge devices which facilitate speed and accuracy in blackboard demonstrations.

Libraries

The new library is located on the first floor of the East Building. The reading room seats about 300 students at one time, and the stack capacity approximates 25,000 volumes. Here are available all of the general reference books, most of the professional and scientific volumes, and most of the periodicals to which the University subscribes.

Library hours are as follows:

8:45 A.M. to 7:30 P.M. Mondays through Fridays

8:45 A.M. to 1:00 P.M. Saturdays

Closed on Sundays and Holidays

The library is under the direction of a librarian and three assistants all of whom have had special training for the work.

A general reading room and library is maintained by the Northeastern Student Union in Room 356, Richards Hall. The books located here are chiefly non-technical works dealing with contemporary affairs, religious problems, international relations, travel, etc., among which students may browse during periods of relaxation. A few of the literary and religious periodicals are also available in this room.

Boston Public Library

All members of the University, whether resident or non-resident students, have the privilege of taking books from the Boston Public Library and of using the library for general reference and study. Inasmuch as this is one of the best in the country, it presents unusual opportunities to the students. Within a few minutes' walk from the University, it enables students to have unlimited reference at any time to books and periodicals bearing upon their studies.

Lecture Assembly Halls

Through special arrangement, Jordan Hall, Symphony Hall, and the Boston Opera House are made available for assembly purposes. These halls provide ample space for student activity assemblies and for special lectures by noted men. All the students in college at any period assemble for one hour each week throughout the college year. More than half of the assembly sessions are devoted to interests and activities developed by the students themselves. The other assembly periods are devoted to special lectures, sometimes under the direction of the student body and sometimes under the direction of the faculty. The special lectures are devoted to those elements of life which count most in the development of a man's viewpoint and his character.

Equipment for Physical Training

Northeastern has exceptional facilities for all-round physical training. The gymnasium is one of the most complete in New England. Adjoining Richards Hall is a large field equipped for athletics. Here are two tennis courts, an outdoor gymnasium, a rifle range, a baseball cage, jumping pits, and a track with a 100-yard straightaway.

Natatorium and Gymnasium

The Natatorium is located in the East Building between the assembly hall and gymnasium. It is 75 feet long and 25 feet wide and is generally regarded as one of the finest of its kind in this area.

The Gymnasium is known as the Samuel Johnson Memorial Gymnasium and provides the following facilities: three gymnasiums, a twelve-lap running track, two large exercise rooms, boxing and wrestling rooms, handball and squash courts, bowling alleys, showers, steam baths, massage rooms, electric cabinet baths, and locker rooms.

Huntington Field

Huntington Field, the University athletic field, is located on Kent Street in Brookline and provides ample facilities for track, baseball, football and other outdoor sports. The University maintains bus service between its Huntington Avenue plant and the Huntington Field, making it possible for students to get back and forth with a minimum loss of time. The field is equipped with a commodious field house as well as ten sections of stadium seats for spectators.

Student Activities

Northeastern University regards student activities as an integral part of its educational program. One of the main departments of the University is charged with the responsibility of coordinating the various types of activities and of administering the social, musical, literary, and athletic organizations in such a way as to enable each to contribute in a wholesome, worthwhile manner to student life at Northeastern. Every student is encouraged to participate in such activities as may appeal to him, although a standard of scholarship which is incompatible with excessive devotion to such pursuits is required of all students.

Members of the faculty also are interested in the informal aspects of the college program. Teaching loads are kept sufficiently low so that the instructional staff may have ample opportunity to mingle with students outside of the classroom in social activities and on the athletic field. In fact, some member of the faculty is appointed to serve as adviser for each student activity. His function is not to dictate how the organization shall be run, but to encourage the students in their extra-curricular endeavors and to give them the benefit of his mature point of view in solving the problems that inevitably arise.

One of the outstanding contributions of the Co-operative Plan in the field of higher education has been its capacity to develop in students those powers of social understanding that are so essential to success in professional life. At Northeastern the program of student activities is made to contribute to this end in a very real way. It is a conscious aim of the student activities advisers to develop among their advisees those qualities of personality and character which will enhance their usefulness as future professional men and citizens. Students have splendid opportunities to develop administrative and executive ability as leaders of undergraduate organizations. No academic credit is awarded for any student activity. This has been no deterrent, however, to student participation in extra-curricular activities, for a recent survey of the undergraduate body showed that over ninety per cent of the enrollment were engaged in one or more forms of student activity.

Student Council

Student government of the Day Colleges at Northeastern University is vested in the Student Council, composed of elected representatives from the various classes. The Council is the authority on all matters relating to student policies not definitely connected with classroom procedure. It has jurisdiction, subject to faculty approval, over all such matters as customs, privileges,

and campus regulations. The Dean of Students serves as faculty adviser to the Student Council.

Northeastern Student Union

The purpose of the Northeastern Student Union is to carry out the work of a Christian association within the University. It endeavors to deepen the spiritual lives of Northeastern men and women through the building of Christian character, to create and promote a strong and effective Northeastern University spirit in and through a unified student body, to promote sociability, and to emphasize certain ethical, social, civic, intellectual, economic, physical, vocational, and avocational values.

All students are encouraged to participate in the activities of the Union, no matter what their religious faith, as the work of the Union is entirely non-sectarian. A good moral character is the only requirement for eligibility to membership. It is hoped that as many students as can will participate in this ideal extra-curricular work.

The Union conducts a weekly Chapel Service in the little chapel in Richards Hall, to which all faculty members and students are invited. The service, which is non-sectarian and voluntary, is held on Thursday mornings from 8:40 to 8:55 o'clock. Many eminent preachers of Greater Boston are engaged to deliver brief addresses.

Athletic Association

All students in the Day Colleges are members of the Northeastern University Athletic Association. Policies of the association are passed upon by a Faculty Committee on Student Activities. This committee decides what students are eligible to participate in athletics, what the various sports schedules shall be, and what students may be excused from classes to represent the University on athletic trips.

The actual administration of the athletic program is in the hands of a second committee, known as the General Athletic Committee, which consists of the Director of Student Activities, the captains and managers of all varsity teams, and the coaches as ex officio members.

The University maintains both varsity and freshman teams in baseball, basketball, cross-country, football, hockey, and track. Intercollegiate games and meets are arranged with the leading colleges in the East. In addition to intercollegiate athletics the athletic association conducts an intra-mural program in various sports.

Publications

"The News"

A college newspaper, the *Northeastern News*, is published each week throughout the college year by a staff selected from the student body. The copy is prepared, edited, and published by the students themselves with the counsel of a faculty adviser. Opportunity is afforded for the students to express their opinions on subjects relating to study, co-operative work, social events, or topics of the day. Positions on the *News* staff and promotions are attained by competitive work. The paper is in part supported by advertising, both national and local, and in part by a portion of the student activities fee. The *Northeastern News* is a member of the Eastern Intercollegiate Newspaper Association, and sends one of its editors to the annual convention of this association each year. Copies of the *News* are mailed to upperclassmen when they are at co-operative work and to freshmen after the close of their college year.

"The Cauldron"

The combined senior class publishes annually a college year book, *The Cauldron*. It is ready for distribution in the latter part of the second semester and contains a complete review of the college year with class histories, pictures of all seniors, of the faculty, and of undergraduate groups, as well as a miscellany of snapshots and drawings contributed by students.

Honor Societies

Three honorary societies are chartered by the University in its Day Colleges:

Tau Beta Pi, in the College of Engineering (*for men only*).

The Sigma Society, in the College of Business Administration.

The Academy, in the College of Liberal Arts.

Election to the college honorary societies is founded primarily upon scholarship, but before a man or woman is privileged to wear the honorary society insignia there must be evidence of an integrity of character and an interest in the extra-curricular life of the University as well as an acceptable personality. The Societies have memberships consisting of the outstanding men and women in the Day Colleges. Election to the honorary society is the highest honor that can be conferred upon an undergraduate.

Professional Societies and Clubs

To assist in the promotion of social, cultural, and intellectual advancement through informal channels, a number of professional societies and clubs are sponsored.

National Engineering Societies

Students in the several professional curricula of the College of Engineering operate Northeastern University Sections of the appropriate national professional societies. Chief among these are the following:

- American Society of Civil Engineers
- Boston Society of Civil Engineers
- American Society of Mechanical Engineers
- American Institute of Electrical Engineers
- American Institute of Chemical Engineers
- Society for the Advancement of Management
- American Chemical Society

Members of the engineering faculty who hold membership in the parent organizations serve as advisers to these student groups. Meetings are held regularly, usually at night so that students from both divisions may attend, and practicing engineers are invited to address the sections. Occasionally appropriate motion pictures are shown, or the group visits some current engineering project in the vicinity of Boston. The College of Engineering encourages these student sections of the technical societies in the belief that they provide a wholesome medium for social intercourse as well as a worthwhile introduction to professional life.

Membership in the student sections of the American Society of Civil Engineers and Boston Society of Civil Engineers, the American Society of Mechanical Engineers, or the American Institute of Electrical Engineers also includes membership and privileges of the Engineering Societies of New England. This organization is an affiliation of all the major technical societies of Boston and vicinity and provides valuable lectures, smokers, and informal meetings with the outstanding men engaged in engineering work in Boston and vicinity.

Astronomy Club

Membership in the Astronomy Club is open to all students in the College of Engineering who maintain satisfactory scholastic standing. The club has access to machine shops for the construction of telescopes and other instruments. It also has quarters in the penthouse on the fifth floor of Richards Hall. Meetings are held twice a month for the purpose of making astronomical observations and carrying on appropriate discussions.

Banking and Finance Club

The purpose of this organization is to increase among its members the knowledge of the theory and practice of banking. Any student of Northeastern University, while enrolled in any of the banking courses of the College of Business Administration, is eligible to active membership in this club. Meetings are held each

ten-week period at which banking executives from Greater Boston are invited to discuss current issues in the field.

Camera Club

The Camera Club welcomes all men and women interested in photography. Weekly discussions and special evening lectures by guest artists are part of the yearly program. Field trips, monthly photo contests and a general exhibition add to the interest and progressive work of this organization.

Chess Club

The Chess Club gives both beginners and experts an opportunity to enjoy the game. Yearly tournaments are held among the members and, in past years, the best among the members have engaged in intercollegiate competition.

Combined Musical and Dramatic Clubs

The Department of Student Activities sponsors musical clubs, such as the following: a concert orchestra, a band, a glee club, a banjo club, and a dance orchestra, for which all students with musical ability are eligible. Membership in the various musical clubs is attained by competitive effort.

Each organization has a faculty adviser and each elects a representative to the Musical Clubs Council. The purpose of this council is to co-ordinate the various musical activities of the Day Colleges. At the annual Musical Clubs Banquet, held early in the spring, charms are awarded to the leaders and managers of the several clubs and to members who have played over a period of three full years.

The various musical clubs, in conjunction with the Dramatic Club, combine in an annual mid-winter entertainment and participate in occasional outside public engagements throughout the college year.

Students interested in dramatics have an opportunity to cultivate this art under faculty coaches who co-operate with the Dramatic Club in the production of several pieces in the course of each college year.

Debating Society

The purpose of the Debating Society, formed in 1936, is "to foster and promote an interest and facility in formal argumentation; to develop an impartial, unbiased, and intellectual consideration of questions and issues of current interest; and to sponsor intercollegiate relationships and competition in the debating field." Membership is open to all students of the Day Colleges.

Omega Sigma Society

This club was organized in 1943 for all women students enrolled in the Day Colleges, to derive social, moral and intellectual benefits for both themselves and the University.

German Language Club

Students are given an opportunity in this club to use their knowledge of German in ways that give them entertainment as well as a greater appreciation of foreign customs and literature.

International Relations Club

The International Relations Club was founded in 1932 for the purpose of studying and discussing those current national and international events and issues which vitally concern our American life and institutions.

It is the intention of the club to deal with all questions in an impartial and broadminded manner, and to take an intelligent and effective part in promoting international understanding and harmony. The club maintains contacts with similar organizations in other colleges.

Membership is not open to freshmen, and only to those upperclassmen who maintain good scholarship.

Law and Accounting Club

All students interested in accounting and law are invited to join this stimulating club. Problems and cases involving the interrelations of accounting and law are presented and discussed at club meetings. Although upperclassmen usually present problems arising out of thesis or co-operative work, speakers from the professional world come to the meetings to present papers and lead the student discussion.

Mathematics Society

The Mathematics Society encourages the study of topics of mathematical interest which are either outside or beyond the scope of the regular mathematics courses. Membership is restricted to those men and women who have completed one and one-half years of study in mathematics and have an average grade of not less than "C" in mathematics courses up through differential calculus. The club meets once every five weeks in the evening. Although membership is limited to upperclassmen, any student is always welcome to any meeting, and freshmen especially interested in mathematics are always welcome.

The final program of the year is devoted to a dinner meeting for which some prominent outside speaker is procured.

Radio Club (Suspended for the duration of the war.)

One of the most popular undergraduate activities is the Radio Club. Members are provided opportunity for code practice and are encouraged to obtain their amateur licenses. The club owns and operates station W1KBN, a short wave transmitter, located in the Radio Laboratory in the penthouse of Richards Hall. Meetings are held about once a month for the discussion of technical matters. Practicing radio engineers are frequently invited to address the club at evening meetings, when students in both divisions may attend.

Rifle Club

Organized a number of years ago, the Rifle Club was so successful that in 1933 riflery was recognized as a minor sport. Members of the club are given instruction in the art of rifle shooting. Those students who excel in intra-mural competition are selected for the team representing the University in intercollegiate contests. Practice sessions are held twice a week in the University rifle range. Membership is open to all students. Northeastern is a member of the New England Intercollegiate Rifle League and the National Rifle Association.

Yacht Club

Only recently formed, the Yacht Club is a member of the Intercollegiate Yacht Racing Association. The club participates in regattas held in the Charles River Basin and also in regattas held at other colleges.

Class Organization and Activity

Each of the classes in the Day Colleges elects its officers and carries on activities as a class. Dances are sponsored by the classes at regular periods throughout the year. One of the high lights of the social program is the Junior Promenade, held each spring at one of the Boston hotels.

Seniors plan a number of activities just prior to Commencement.

Freshmen are required to wear the red and black cap distributed through the Department of Student Activities in order that they may be readily distinguishable to each other and to upperclassmen. (This requirement suspended for the duration of the war.)

Convocations

The hour from 12:00 to 1:00 on Wednesdays throughout the year is set aside for convocations. Attendance is compulsory. Arrangements are made to bring before the student body some of the ablest and foremost thinkers of the day. A list of speakers

for the year will be found on page 16 of this catalog. When the convocation hour is not occupied by a University lecturer, class meetings, concerts, or athletic rallies are held instead. Such gatherings are under the direction of the Department of Student Activities.

Fraternities

There are at present nine local Greek letter fraternities chartered by Northeastern University. Each fraternity is provided with a faculty adviser who is responsible for the proper administration of the fraternity house under the rules and regulations established by the faculty. The list of fraternities in the order of their establishment is as follows:

- | | |
|-----------------------|--------------------|
| 1. Beta Gamma Epsilon | 5. Phi Beta Alpha |
| 2. Alpha Kappa Sigma | 6. Phi Gamma Pi |
| 3. Nu Epsilon Zeta | 7. Sigma Phi Alpha |
| 4. Sigma Kappa Psi | 8. Kappa Zeta Phi |
| 9. Gamma Phi Kappa | |

Elected representatives from each fraternity make up an Inter-Fraternity Council, a body which has preliminary jurisdiction over fraternity regulations. Its rulings are subject to the approval of the Faculty Committee on Student Activities.

Sorority

Sigma Phi Psi

A sorority organized by the first six women students at Northeastern University and at present the only local Greek letter sorority. New members are pledged annually after completion of one semester. All activities of the sorority are supervised by a faculty adviser.

The Co-operative Plan

How It Works

The Co-operative Plan works in the following manner. Upperclassmen, including both men and women, are divided into two nearly equal groups, one of which is called Division A and the other Division B. Each student is assigned a job with some business or industrial concern. So far as possible a student in one Division is paired with a student in the other Division, so that the two, by taking turns, may occupy one job throughout the entire year. The Division A student starts the college year with a term of classroom work, while the Division B student starts the year with a term at co-operative work. At the end of that term, the Division A students go out to work with a co-operating firm, while their places in the classrooms are then taken by their alternates, the corresponding Division B students. When the next term has passed the Division A students return to college and the Division B students return to the co-operative job. The alternation of work and classroom study continues throughout the year so that an upperclassman has annually two terms at college, two terms at co-operative work, and a brief vacation.

Faculty Co-ordinators

Students are assigned to a co-ordinator, who interviews them periodically during their freshman year for the purpose of determining their background, abilities, temperaments, and aptitudes. During these interviews the co-ordinator discusses various fields of activity and answers such questions as the students may have in regard to the many phases of business and industry. Students are studied in the light of their physical condition, scholastic ability, and other factors affecting their probable success in vocational life. These interviews culminate in an agreement between the students and their co-ordinators regarding the field of co-operative work in which the students are placed. During the upperclass years students continue to have frequent conferences with their co-ordinators regarding vocational adjustments and personal problems. In this way the progress of all students is observed and co-ordinated with their college work to the end that maximum values are obtained from their training at Northeastern.

Placement

The co-ordinator visits co-operating firms and arranges with them for the employment of students under his charge. The range of opportunities available to Northeastern students is wide, in-

cluding practically all phases of industrial life. As a general rule, sophomores are placed upon routine and laborious jobs through which they may prove their fitness for more responsible work. The jobs upon which Northeastern students are employed are in no sense protected opportunities. They are regular jobs under actual business conditions and are held in competition with other sources of supply. The only special privilege accorded Northeastern students is that of attending college on the Co-operative Plan. The University expects students to stand on their own feet while on co-operative work, and advancement to the more responsible jobs is based entirely upon meritorious performance.

Supervision and Guidance

While the University does not adopt a paternal attitude toward co-operative work, it nevertheless assumes certain responsibilities toward students and co-operating firms. Co-ordinators visit each job in order that the employer may report upon the student's achievement and that necessary adjustments may be made. Co-ordinators supervise the assignment of students to various jobs and in conjunction with employers arrange for promotions and training schedules. Problems that arise on co-operative work are adjusted by common agreement of co-ordinator, student, and employer. In the event of special difficulties or dissatisfaction, the case may be adjusted by the Committee on Co-operative Work, which comprises several members of the faculty.

Through a series of co-operative work reports prepared during their working periods, students are led to analyze their jobs and to develop a thoughtful and investigative attitude toward their working environment. A most important phase of co-operative work is the opportunity afforded for guidance by the frank discussion of actual problems encountered on the job. The intimate contact between co-ordinator and student is of great worth in helping the student to get the most value from each co-operative work assignment. While the University endeavors to provide every possible opportunity for its students, it expects them at the same time to take the initiative and to assume the responsibility involved in their individual development. To every student are available the counsel and guidance of the faculty, and every resource at its disposal. But the faculty does not coerce students who are uninterested or unwilling to think for themselves.

The Co-operative Plan is thus designed specifically to provide actual working conditions which afford the students practical experience, give meaning to their program of study, and train them in reliability, efficiency, and teamwork.

Correlation of Theory and Practice

Co-operating companies employ the students, both men and women, in the various departments of their establishments. The training is thorough. To derive the greatest value from co-operative work the student is advised to continue in the employ of the co-operating firm for at least one year after graduation, since certain types of work which would afford valuable experience cannot be made available during the alternating period of work and study. Statistics compiled over a period of many years show that an average of from thirty-five to fifty per cent of each graduating class remains with co-operating employers after graduation.

Co-operative Work Reports

The values to be derived from practical experience are further enhanced by required report writing. These co-operative work reports are written during the working periods by all co-operative students. A complete job analysis is required as the first report written on any new co-operative work assignment. Subjects of other reports are selected by the student after conference with the Co-ordinator of Co-operative Work, by whom they must be approved. The reports are designed to encourage observation and investigation on the part of the students and to help them to appreciate more fully the extent and value of their experience. These reports are carefully read by the co-ordinator and are discussed with the student during the following college period. Exceptionally valuable results are obtained from these reports. The value derived must necessarily be directly proportional to the conscientious and intelligent concentration of effort by the student upon this phase of the work.

Co-operative Work Records

Complete and detailed records are kept of the co-operative work of each student. They are based upon reports made by the employer at the end of each working period; upon occasional personal conferences between the employer and the co-ordinator; and upon various evidences of the student's attitude toward all the phases of his co-operative work. It is not possible for the student to secure a degree unless this part of the curriculum is completed satisfactorily. These records of practical experience serve as a valuable future reference for the Alumni Placement Division of the Department.

Positions Available

Because of uncertainties of business conditions, as well as other reasons beyond its control, the University cannot and does not

guarantee to place students. However, past experience has demonstrated that students who are willing and capable of adapting themselves to existing conditions are almost never without employment except in periods of severe industrial depression.

Earnings

It should be understood that the primary purpose of the Co-operative Plan is training. For this reason the rates of pay for students tend to be low because students are given the privilege of attending college on the Co-operative Plan and because effort is made to provide the student with the opportunity of being transferred, at reasonable intervals, from one department to another of the co-operating company.

Location of Work

It is the policy of the University to assign students to co-operative work within commuting distance of their homes. This is not always possible, however, and at times it may be necessary for students to live away from home in order to obtain satisfactory and desirable co-operative work assignments.

Types of Co-operative Work

In so far as possible students are placed at co-operative work in that general field for which they express preference, provided that aptitude, physical ability, temperament, and other personal qualities appear to fit them for this field. Usually students are placed first in those jobs of an organization where they may learn the fundamental requirements of the business.

For example, a student interested in manufacturing might be started as an operative on some machine in the plant. As progress and other conditions warrant, transfer to other types of work, such as shipping, inspecting, adjusting complaints, bookkeeping, or cost finding, and so on, would take place so that in the course of a period of four years of co-operative training the student would have the opportunity to acquire a substantial background in at least some of the functions of the factory administration. This progressive type of training is more readily obtained in the employ of one company. A change of company each year usually provides more a change of environment than a progression of experiences.

Engineering firms, manufacturing companies, public utilities, and many other types of enterprises are employing Northeastern students. In some cases definite training schedules have been established so as to permit the student one full year in each of several important departments.

Typical Co-operative Training Schedules

These schedules are arranged with the basic idea of giving the student a comprehensive training through the several different departments, but must of necessity be varied in accordance with the needs of those departments.

BOSTON EDISON COMPANY

The schedule of the Boston Edison Company is divided into the following general classifications. Very few co-operating students obtain experience in all branches, but students progress from year to year in the respective branches as conditions require.

Standardizing

- (a) Testing and standardizing of electrical instruments
- (b) Miscellaneous standardization
- (c) Repairs on electrical instruments
- (d) Laboratory high voltage tests

Steam Practice

- (a) Turbine, engine and boiler tests
- (b) Instrument tests and repairs
- (c) Miscellaneous tests

Electrical Testing

- (a) Testing and repairing of electrical instruments in power stations and sub-stations
- (b) Cable tests
- (c) High voltage tests on apparatus and in the field
- (d) Checking up construction work
- (e) Miscellaneous electrical tests

Chemical Engineering

- (a) Fuel analysis
- (b) Miscellaneous tests and analysis of oils, water paints, and other materials

Photography

Office Work

HUNT-SPILLER MANUFACTURING CORPORATION

- ONE YEAR General laboratory and plant work, including preparation of samples
Pyrometry
Use and care of metallurgical apparatus
- ONE YEAR Complete analysis of coal, coke, limestone, sand, iron, soil, etc.
- ONE YEAR Keeping of general metallurgical records, filing, and making of reports
- ONE YEAR Analysis for combined, graphitic, and total carbon with a complete knowledge of a carbon combustion apparatus

PEPPERELL MANUFACTURING COMPANY

- ONE YEAR Stock Records
- ONE YEAR Production Analysis
- ONE YEAR Inventory Control

General Information

College Expenses

Tuition

The tuition for all curricula in the Day Colleges is \$250 per year, or \$125 per term. Certain fees and deposits are also required as specified in the following paragraphs. A complete statement of tuition and fee payments is given on page 46.

Students who carry academic loads of greater or less than normal amount may pay their tuition on a semester hour basis.

University Fee

All students are charged a University Fee of twenty-four dollars (\$24) a college year. This fee for upperclassmen is payable in two installments: twelve dollars (\$12) with the first payment of tuition and twelve dollars (\$12) with the second payment of tuition. For freshmen it is payable fourteen dollars (\$14) with the first tuition payment and ten dollars (\$10) with the second tuition payment.

The University Fee covers library, laboratory, materials charges, and similar items for which separate fees are frequently charged by other colleges and universities. It is payable by all students regardless of the curriculum in which they are enrolled.

Student Activities Fee

Each student in the Day Colleges is charged a student activities fee of sixteen dollars (\$16) each college year, for upperclassmen payable one-half with each tuition payment and for freshmen payable entirely with the first tuition payment. This fee supports in part certain student activities, and includes membership in the *Northeastern Athletic Association* and subscription to *The Northeastern News*, the college paper.

The services of a physician are also available for all students under this fee. Minor ailments are treated by the college health officers without additional charge. Any student who shows signs of more serious illness is immediately advised to consult a specialist or return home in order to receive further treatment.

Chemical Laboratory Deposit

(Applies only to students taking chemical and chemical engineering laboratory work)

All upperclassmen taking chemical or chemical engineering laboratory work are required to make a deposit of ten dollars

(\$10) at the beginning of each term from which deductions are made for breakage, chemicals, and destruction of apparatus in the laboratory. Freshmen taking chemistry make a chemical laboratory deposit of ten dollars (\$10) at the beginning of the year.

Any unused portion of this deposit will be returned to the student at the end of the college year. If the charge for such breakage, chemicals, or destruction of apparatus is more than the sum deposited, the student will be charged the additional amount.

Schedule of Payments for Freshmen

<i>First term</i>	Tuition.....	\$125.00
	Fees.....	30.00
	Chem. Lab. Deposit.....	10.00
	Total.....	\$165.00
<i>Second Term</i>	Tuition.....	\$125.00
	Fees.....	10.00
	Total.....	\$135.00

Payment Due Dates

<i>Class Entering</i>	<i>First Term</i>	<i>Second Term</i>
September 1944	September 25, 1944	January 29, 1945
March 1945	March 12, 1945	July 16, 1945
June 1945	June 11, 1945	October 15, 1945
September 1945	September 10, 1945	January 14, 1946

Schedule of Payments for Upperclassmen

Payments due on opening day of each term as follows:

Tuition.....	\$125.00
Fees.....	20.00
Total.....	\$145.00

Deferred Payment Fee

There will be a \$2.00 deferred payment fee added to all bills which are not paid by the Saturday following the date on which payments fall due. When further extensions of time are given on payments which have been previously deferred, an additional \$2.00 fee may be charged for each extension.

Failure to make the required payments on time, or to arrange for such payments, is considered sufficient cause to bar the student from classes or suspend him from co-operative work until the matter has been adjusted with the Registrar.

Late Registration Fee

A fee of \$5.00 will be charged for failure to register in accordance with prescribed regulations on the dates specified in the college registration bulletins.

Graduation Fee

A fee of ten dollars (\$10) covering graduation is required by the University of all candidates for a degree. This fee must be paid before the end of the seventh week of the second term in the senior year.

Payments

All payments should be made at the comptroller's office which is located on the first floor of Richards Hall. Checks should be made payable to Northeastern University.

Refunds

The University provides all instruction and accommodations on an academic term basis; therefore, *no refunds are granted except in cases where students are compelled to withdraw on account of personal illness or to enter the armed forces of the nation.*

Expenses

The following tables, compiled from expense returns submitted by the student body, give an idea of freshman expenditures under ordinary conditions.

Estimated College Expenses for a Freshman

Application Fee	\$ 5.00
Tuition and Fees	290.00
Chemical Laboratory Deposit	10.00
Books and Supplies	35.00
	\$340.00

(Engineering students should add approximately \$25 for drawing instruments and equipment.)

Estimated Living Expenses Per Week for a Freshman Residing Away from Home

Room Rent	\$ 4.00-6.00
Board	7.00-9.00
Laundry	1.00
Incidentals	2.00
	\$14.00-18.00

The figures given above are approximate and may not exactly apply to any one student; however, they will be found to represent fairly well the expense of a freshman who lives comfortably but without extravagance.

Textbooks and Supplies

The Northeastern University Bookstore, located in the basement of Richards Hall, is a department of the University and is operated for the convenience of the student body. All books and supplies which are required by the students for their work in the University may be purchased at the Bookstore.

All students may purchase Day College textbooks which are for their own use at a ten per cent discount. The ten per cent discount will not apply on equipment, supplies, or novelties. It is the policy of the Bookstore, however, to stock these materials and to sell them at the lowest possible prices.

Part-Time Work

Students who find it necessary to accept part-time jobs while attending college may obtain such work through the Director of Co-operative Work.

Students are not justified in assuming that the University will take care of their expenses or guarantee to supply them with work sufficient to meet all their needs.

A student should have available a reserve fund adequate to provide for immediate needs and unexpected contingencies. This should ordinarily amount to at least the first year's tuition plus the student activity and other fees, room rent, and board for several weeks, or a total of about \$500.

Grades and Examinations

Examinations

Examinations covering the work of the term are usually held at the close of each term. Exceptions may be made in certain courses where, in the opinion of the instructor, examinations are not necessary.

Condition Examinations

Condition examinations are usually given on the Saturday preceding the registration day of each term in which a course starts. The charge is three dollars (\$3.00) for each condition examination. No student may take more than two condition examinations on any one day.

A student must petition to take a condition examination at least two weeks in advance of the date the examination is to be given.

The responsibility for the removal of a condition rests with the student, who is required to ascertain when and how the condition can be removed.

Senior Condition Examinations

Condition examinations in first term senior courses will be offered during the second term senior examination period. No student will be allowed more than one such condition examination.

No condition examinations in second term senior courses are offered at the end of the second term. This means that a failure in a second term senior course cannot be made up before Commencement.

Grades

A student's grade is officially recorded by letters, as follows:

- A superior attainment
- B above average attainment
- C average attainment
- D lowest passing grade, poor attainment (the faculty will accept only a limited amount of grade D work toward the Bachelor's degree)
- F failure, removable by condition examination
- FF complete failure, course must be repeated in class
- I incomplete, used for intermediate grades only to signify that the student has not had time to make up work lost through excusable enforced absence from class
- L used in all cases of the removal of a failure by condition examination or by attendance at summer term.

A student who does not remove a condition before that course is again scheduled, a year later, must repeat the course. A condition in more than one subject may involve the loss of assignment to co-operative work.

The responsibility for the removal of a condition rests with the student who is required to ascertain when and how the condition can be removed.

Dean's List

A Dean's List, issued at the end of each term, contains the names of upperclass students who have an honor grade average in all subjects during the preceding period. Freshmen who achieve high scholastic standing are included on a Freshman Honor List, which is published at the end of each grading period. No student under disciplinary restrictions is eligible for either of the honor lists.

Reports on Scholastic Standing

Freshman reports are issued at the end of each grading period; upperclass reports, at the end of each term. Questions relative to grades are to be discussed with the student's faculty adviser.

Students are constantly encouraged to maintain an acceptable quality of college work. Parents and students are always welcomed by the college officers and faculty advisers for conference upon such matters.

Parents or guardians will be notified whenever students are advised or required to withdraw from the University.

General Conduct

Conduct

It is assumed that students come to the University for a serious purpose and that they will cheerfully conform to such regulations as may from time to time be made. In case of injury to any building or to any of the furniture, apparatus, or other property of the University, the damage will be charged to the student or students known to be immediately concerned; but if the persons who caused the damage are unknown, the cost for repairs may be assessed equally upon all the students of the University.

Students are expected to observe the accepted rules of decorum, to obey the regulations of the University, and to pay due respect to its officers. Conduct inconsistent with the general good order of the University or persistent neglect of work may be followed by dismissal; if the offense be a less serious one, the student may be placed upon probation. The student so placed upon probation may be dismissed if guilty of any further offense.

It is desired to administer the discipline of the University so as to maintain a high standard of integrity and a scrupulous regard for truth. The attempt of any student to present any work which he or she has not performed, or to pass any examination by improper means, is regarded as a most serious offense and renders the offender liable to immediate expulsion. The aiding and abetting of a student in any dishonesty is also held to be a grave breach of discipline.

Scholastic Year for Seniors

Seniors of either division who are candidates for a degree in the current year must have completed all academic work, class assignments, theses, regular and special examinations, before twelve o'clock noon of the Saturday next following the close of recitations for seniors.

Attendance

Students are expected to attend all exercises in the subjects they are studying unless excused in advance. Exercises are held and students are expected to devote themselves to the work of the University between 9:00 A.M. and 5:00 P.M., except for a lunch period, on every week day.

No cuts are allowed. A careful record of each student's attendance upon class exercises is kept. Absence from regularly scheduled exercises in any subject will seriously affect the standing of the student. It may cause the removal of the subject or subjects from a schedule. If, upon the presentation of a reasonable excuse for the absence, however, the student may be allowed to make up the time lost and be given credit for the work, which must be completed at such time and in such manner as the instructor in the course may designate.

Laboratory work can be made up only when it is possible to do so during hours of regularly scheduled instruction.

Absences from exercises immediately preceding or following a recess are especially serious and entail severe penalties.

Attendance at all mass meetings of the student body is compulsory. Exceptions to this rule are made only when the student has received permission from the Director of Student Activities previous to the meeting from which absence is desired.

Student Housing

Housing Regulations

The University endeavors to exercise due consideration and care for the student's welfare while he or she is in residence. This necessitates the adoption of the rules and regulations presented herewith.

1. Assignments will be made when the student registers.
2. Students may inspect rooms before accepting an assignment; after reaching a decision students must notify the office of the Registrar, 254R.
3. Students who accept room assignments must retain them for the period of their residence, unless given permission by the Registrar to change.
4. Students are not permitted to live in unsupervised quarters. Under no conditions are groups of students permitted to lease apartments.
5. Students are not permitted to engage rooms without the prior approval of the University. Those violating this rule will be required to give up such rooms immediately and will be assigned by the University to approved quarters.
6. Violation of any of the above rules is considered a breach of discipline and will be dealt with accordingly.

Dormitories

At present the University does not maintain dormitories. Provision, however, is made for students to secure rooms in the vicinity. Many freshmen prefer to take room and board at the fraternity houses, which are all supervised by the University through faculty advisers. For information relative to such housing write the Director of Admissions.

Rooms in the dormitory of the Huntington Avenue Branch of the Boston Y.M.C.A. may be secured only through the Housing Department of the Y.M.C.A. The applicant must present himself in person to a representative of the Department before assignment will be made.

Applicants desiring to room in the Association dormitory are advised to write the Housing Department of the Huntington Avenue Branch, 316 Huntington Avenue, Boston, Massachusetts.

Freshman Counseling

Freshman Orientation Period

In order that freshmen may be ready to pursue their academic work with greater composure and be somewhat acclimated before the beginning of scholastic work, three or four days prior to the first term are devoted to a freshman orientation period. During this time freshmen are advised as to choice of program, and assisted in every way possible in order that they may be prepared to begin serious study and work on the first day of the college term. All freshmen are required to attend all exercises at the University scheduled during the orientation period.

An optional feature of the orientation program is the freshman camp conducted under the auspices of the Student Union. The camp is planned particularly for out-of-town students, although commuters are welcomed. It aims at providing a stimulating and wholesome environment under vacation conditions in which the new men may become acquainted with one another and with members of the faculty. The camp site on Lake Massapoag, in the northern part of Massachusetts, is admirably equipped for this purpose, having ample facilities for baseball, basketball, tennis, boating and swimming. The cost of the two days at camp is nominal, and most freshmen avail themselves of this opportunity for recreation prior to the beginning of the college year.

Physical Examination

All freshmen receive a thorough physical examination at the University during the orientation period. All students are expected to report promptly at the appointed time for examination. Those who fail to appear at the appointed time will be charged a special examination fee of two dollars (\$2.00).

Freshman Counselors

At the time of matriculation each freshman is assigned to a personal adviser, a member of the faculty, who serves as an interested and friendly counselor during the perplexing period of transition from school to college. A personal record card is prepared for each student, containing certain pertinent data from the preparatory school record, the report of the physical examination at Northeastern, scores on psychological tests, the results of placement examinations, and any special notes which may be of significance in counseling work. The aim of the freshman advisory system is primarily to assist students in making an effective start upon their programs and secondarily to acquire for the later use

of guidance officers a fund of significant information relative to every freshman. Counseling is under the direction of the Dean of Students, assisted by a clinical psychologist, who handles the diagnosis and remedial treatment of difficult problem cases. Direct counseling of women students is under the supervision of a woman member of the staff with the title, Adviser for Women Students.

Individual Attention to Freshmen

Not only is attention given to the scholastic problems of the student, but also to personal problems in which advice is needed and desired. The aim is to guide the student to the fullest possible personal development.

The college records of all students are carefully analyzed in the light of what may reasonably be expected from them in view of their previous school record, their scores on psychological tests, and all other factors in their situations. If they are not doing their best work, investigations are made to determine and eliminate the causes. If they are doing as well as could be expected, or better, they are encouraged to continue their efforts. In other words, each student is held to the best work possible, through advice, encouragement, and assistance.

Scholarships, Prizes and Awards

Trustee Scholarships

Established in 1928 by the Board of Trustees of Northeastern University. Each year the University grants in the three Day Colleges twenty-five full tuition scholarships to entering freshmen who have demonstrated throughout their preparatory or high school course superior scholastic attainment. For additional information relative to these scholarships communicate with the Director of Admissions.

Charles Hayden Memorial Scholarships at Northeastern University

Established in 1939 through the generosity of the Charles Hayden Foundation and subject to annual renewal. The Foundation, created by the will of the late Charles Hayden, an alumnus of the Boston English High School, offers annually a sum of money to be distributed as memorial scholarships at Northeastern University. The scholarships are awarded to "deserving boys" whose parents are unable to finance the entire cost of their education. To be eligible for consideration a student must have graduated from the English High School or from one of the following high schools in Boston and its metropolitan area: Arlington, Belmont, Boston (Brighton, Charlestown, Commerce, Dorchester, East Boston, English, Hyde Park, Jamaica Plain, Mechanic Arts, Public Latin, Roslindale, Roxbury Memorial, South Boston), Braintree, Brookline, Cambridge (High and Latin, Rindge Technical), Canton, Chelsea, Dedham, Everett, Lexington, Malden, Medford, Melrose, Milton, Needham, Newton, North Quincy, Quincy, Revere, Somerville, Stoneham, Wakefield, Waltham, Watertown, Wellesley, Weston, Weymouth, Winchester, Winthrop. While the scholarships are designed primarily to assist students through their freshman year in college, the Foundation has set up a supplementary loan fund to make available limited assistance to meet exigencies which may arise in the upperclass years. Each recipient of a Charles Hayden Memorial Scholarship is presented a properly endorsed certificate and is eligible for membership in the Charles Hayden Scholars Club of the University. Full particulars concerning these awards may be obtained from the Director of Admissions of Northeastern University.

Dean's List Scholarships

Established in 1929. Annually at the Dean's List Dinner three scholarships of one hundred dollars each, known as the Dean's

List Scholarships, are presented to the students with the outstanding records in the sophomore, middler, and junior classes. These scholarships are applicable to the recipients' tuition the first term of the following year.

President's Letter

Established in 1929. At the time of the award of the Dean's List Scholarships a President's Letter is presented to the senior student who leads the seniors in the Day Colleges in scholastic achievement. The letter is a congratulatory one from the President of the University and is a coveted prize.

Sears B. Condit Honor Awards

Established in 1940 through the generosity of Sears B. Condit. In the fall of the year at a University convocation Sears B. Condit Honor Awards, not less than ten in number, are awarded to outstanding students in the upper three classes of the College of Liberal Arts, the College of Business Administration, and the College of Engineering. Students who have received the Dean's List Scholarships are not eligible for one of these Honor Awards. Each award carries a stipend of not less than fifty dollars as well as a certificate of achievement.

Boston Society of Civil Engineers Scholarship in Memory of Desmond FitzGerald

Established in 1931 by the Boston Society of Civil Engineers in memory of Desmond FitzGerald, a former president of the Society and an eminent hydraulic engineer with a distinguished record of service. The scholarship is subject to annual renewal. It has been awarded annually since 1931 to an outstanding Northeastern University senior or junior student in the Department of Civil Engineering of the College of Engineering. The presentation is made by the President of the Boston Society of Civil Engineers at a College of Engineering convocation in the spring of the year.

Tau Beta Pi Award

Massachusetts Epsilon Chapter of Tau Beta Pi Association, national honorary society in engineering, offers annually a scholarship of one hundred dollars to the freshman in the college who has, during the previous year, made the highest scholastic record.

The Sigma Society Award

Established in 1930. The Sigma Society, the honor society of the College of Business Administration, offers annually a scholarship of one hundred dollars to the freshman in the college who has, during the previous year, made the highest scholastic record.

The Academy Award

Established in 1938. The Academy, the honor society of the College of Liberal Arts, offers annually a scholarship of one hundred dollars to the freshman in the college who has, during the previous year, made the highest scholastic record.

Omega Sigma Award

Established in 1944. The Omega Sigma Society, composed of women students at Northeastern University, offers annually a scholarship of one hundred dollars to the woman student who, by high scholastic attainment and by demonstration of the quality of leadership, has proven herself the outstanding woman student of the year.

Henry B. Alvord Memorial Scholarship in Civil Engineering

Established in 1940 in memory of the late Henry B. Alvord, Professor of Civil Engineering and Chairman of the Department for eighteen years. The award is made annually to a student graduating from an accredited secondary school who has demonstrated superior academic ability and gives promise of succeeding in civil engineering. The grant of two hundred and fifty dollars is made only to an entering freshman who is qualified for and plans to study civil engineering.

William J. Alcott Memorial Award

Established in 1934 by members of the faculty and other friends to perpetuate the memory of William Jefferson Alcott, Jr., a brilliant member of the Department of Mathematics in Northeastern University from 1924 until his death in 1933. The Award is offered annually in the form of a prize purchased with the income to the fund for outstanding scholastic achievement during the preceding year, either in a particular field of interest or for a superior academic record.

Public Speaking Contest

Established in 1922. Each spring the University conducts a Public Speaking Contest for which all students in the Day Colleges are eligible. Prizes of forty, thirty, twenty, and ten dollars respectively are awarded to the four winning speakers in a contest before the upperclass student body assembled in a general mass meeting. Speeches are original in nature and about ten minutes in length. The judges base their decision on appropriateness of subject, content, and delivery. Preliminary contests are held during the winter in each division.

Northeastern University and Affiliated Schools Including War Courses

Statistical Summary

1942-1943

	Administrative and Instructional Staff	Enrollment	
General Administration	14*		
Northeastern University			
College of Liberal Arts			
Day	56	522	
Evening	12	131	
College of Engineering	81	1733	
College of Business Administration	39	529	
Summer Day College		26	
School of Business	71*	691*	
School of Law (Day and Evening)	17*	174*	
Affiliated Schools			
Lincoln Technical Institute	48	715	
Lincoln Preparatory School	34	470	
Huntington Day School for Boys	15	183	
Huntington Summer School	11	191	
	<u>398</u>	<u>5365</u>	
Less Duplicates	<u>147</u>	<u>226</u>	5139
War Courses			
Civilian Pilot Training Program	11	252	
Engineering Defense Program	166	3114	
Engineering Science Management War Training			
	<u>177</u>	<u>3366</u>	
Less Duplicates	<u>1</u>	<u>34</u>	3332
	<u>427</u>	<u>8471</u>	
Less Duplicates between War Courses and Schools and Colleges	65	40	
Different Number	<u>362</u>	<u>8431</u>	

*These figures include the administrative officers, faculties, and students of the Divisions of the University in Worcester, Springfield, and Providence.

The Alumni Association

THE ALUMNI of the Day Colleges are organized to promote the welfare of Northeastern University, to establish a mutually beneficial relationship between the University and its alumni, and to perpetuate the spirit of fellowship among members of the Alumni Association.

The work of the General Alumni Association is supplemented by the activities of regional alumni clubs located throughout the East and Middle West. The local clubs meet periodically in their respective centers to discuss matters pertaining to the University and its alumni. Meetings are also held in conjunction with the visits of Northeastern's athletic teams to the various club centers.

The Alumni Council

President

JAMES W. DANIELS '25

Secretary

CARL M. WEAVER '34

Vice-President

RAYMOND W. JAMES '32

Treasurer

JOHN E. VADALA '31

Executive Committee

GEORGE C. THOMPSON '30

WALLACE E. MACQUARRIE '40

EDWARD V. KIRKLAND '35

CHARLES M. MCCOOMBE '26

HORACE C. HOUGHTON '26

DOUGLAS F. TULLOCH '24

Director of Alumni Relations

RUDOLF O. OBERG '26

Alumni Council Representatives

1913- BERNARD H. CAPEN '20
 1920 JAMES A. KNOWLTON '19
 PERRY F. ZWISLER '17
 1921-ROGER E. SPEAR
 1922-LAURENCE S. FAUNCE
 1923-EDWARD J. PERRY
 1924-H. RAYMOND BENSON
 1925-RENE G. MAURETTE
 1926-HENRY F. CALLAHAN
 1927-LEON PRIOR
 1928-HOWARD F. KNOWLES
 1929-JAMES H. KINGHORN
 1930-HARRY C. STEDT

1931-THOMAS E. RUSHFORTH
 1932-ALBERT E. JOHNSON
 1934-HORACE S. MILES
 1935-DONALD POWERS
 1936-WILLIAM E. DINGWELL
 1937-WARREN L. GANONG
 1938-IVAN G. EASTON
 1939-WILLIAM E. FEIDT
 1940-ALBERT S. MAKAS
 1941-DAVID C. GERRY
 1942-WILLIAM W. ROBINSON
 1943-RICHARD M. HATCH

NORTHEASTERN UNIVERSITY

C O L L E G E O F

Liberal Arts

Admission Requirements *and* Courses of Study

1944-1946



(CO-EDUCATIONAL)

BOSTON 15, MASSACHUSETTS

July, 1944

THE COLLEGE OF LIBERAL ARTS

Aims

IN PROVIDING the means to a liberal education the College of Liberal Arts of Northeastern University has a threefold objective: first, the development of intellectual capability; second, the development of a well-rounded personality; and third, preparation for a vocation.

While a liberal arts education is based upon a knowledge of the development of the human race and of human experience down through the ages as well as familiarity with the world in which we live, the mere accumulation of a mass of factual information is not adequate. A truly liberal education must develop intellectual capability, the acquisition of definite intellectual interests, and the attainment of rational attitudes and points of view. A liberal education should produce an open mind, free from bias and prejudice; an eagerness for truth; a critical skepticism which insists upon the examination of the basis for every belief and the testing of every proposal before giving it adherence; the ability to analyze the several elements of a problem, to perceive its implications, and to obtain a clear perspective of the entire situation; a deep respect for human institutions and conventions based upon an understanding of the processes of social development but with a willingness to consider judicially suggested improvements.

In providing for the development of a well-rounded personality the College of Liberal Arts endeavors to aid each student in the unfolding of those personality traits and the attaining of that emotional balance which will make him not only individually efficient but also a desirable citizen, qualified in every respect to accept his social responsibilities.

The College of Liberal Arts holds that there is no inconsistency between liberal education and preparation for a vocation, since liberal arts colleges were originally established with the purpose of training for certain professions. Today it is widely accepted that a liberal education must prepare both for the art of living and for the obtaining of a living. The College of Liberal Arts aims at providing an academic program coupled with co-operative work experience which will furnish students with a sound training either for further graduate study or for immediate entrance upon graduation into some vocation.

Methods

So that each student may plan a college program to suit his own interests and aptitudes, a wide range of electives is offered. This does not mean that students are free to elect courses indiscriminately, for if they are to obtain a liberal education they must have training in several basic fields. Therefore, a definite series of basic courses in each curriculum is required by the faculty. These required courses are largely concentrated in the first two years of the curriculum.

Through a comprehensive guidance program students are directed in their selection of courses so that they obtain the proper preparation for their intended vocations. Specialization in a major field is emphasized during the latter part of the curriculum and is facilitated by the opportunity for electing certain courses in the College of Engineering and the College of Business Administration.

Through the Northeastern plan of co-operative education for upperclassmen, the student makes early contact with actual working conditions and profits by the wholesome experience of earning at least part of the money to defray college expenses. Viewed as a whole, then, the college years surround the student not with an artificial atmosphere of cloistered scholarship but with an environment very close to that which he or she will enter after graduation, and thus tend to make for more ready employment, an essential element of vocational competence.

Evening Courses

In order to provide employed men and women with opportunities in liberal arts education, a number of the regular courses are offered during the evening. These courses are designed for three groups of young men and women who are secondary school graduates and qualified for entrance to the college: (1) those who wish to prepare for admission to the School of Law, (2) those who wish to pursue a cultural program leading to the title of Associate in Arts, (3) those who do not wish to follow a specific program but desire to take courses to improve their cultural background.

The evening courses are arranged in three-year programs permitting concentration in English, history and government, and the social sciences, and a pre-legal program. Each of these evening programs meets one-half the semester hour requirement for the A.B. or S.B. degree and leads to the title of Associate in Arts.

Preparation for a Career

The curricula in the College of Liberal Arts afford not only a broad cultural training but also the necessary foundation for a wide range of vocations for both young men and young women. Some of the career opportunities open to the graduates of the College of Liberal Arts together with the academic programs needed are indicated below and in the pages which follow.

Business

The value of a liberal arts preparation for a business career is clearly shown by the increasing demand for liberal arts graduates by the largest and most progressive corporations in the country. For their training programs in manufacturing, merchandising, or selling many companies are seeking adaptable young men and women with a liberal arts background.

Students planning either to go to a graduate school of business administration or to enter business directly upon graduation should major in economics and should elect courses in English, government and psychology. A limited number of specialized courses in the College of Business Administration such as advertising, contracts, industrial management, insurance, investments, real estate practice, and retail merchandising may be taken by students who have had the necessary prerequisites.

Biological Sciences

Students who major in biology can arrange programs which will lay the foundation for the following careers: teaching, dentistry, medicine (see Pre-Medical curriculum), veterinary medicine, public health, sanitation and laboratory methods; research in biology with universities, private research institutions, and governmental agencies under state and federal control; agriculture; and professional work in zoology and its applied fields such as fisheries, animal husbandry, and biological survey, etc. Graduate study is essential for most of these careers.

Chemistry

Chemistry is rapidly approaching the status of a profession as shown by the recent action of the American Chemical Society in laying down specifications for approved undergraduate training in chemistry. Students who choose a chemistry major at Northeastern, a program based upon the above specifications, will be prepared upon graduation to become junior chemists in industrial, commercial, or governmental chemistry laboratories. The same program provides a thorough foundation for graduate study in chemistry.

Dentistry

The minimum requirement for admission to dental schools is two years of preliminary study in an approved college. Since the

requirements of individual dental schools vary, students should familiarize themselves with the specific requirements of the schools in which they are interested. For most dental schools a candidate for admission must offer at least six semester hours each in English, physics, and biology, and twelve semester hours in chemistry including organic chemistry.

Pre-dental students at Northeastern will be able to meet these requirements by taking the first two years of the pre-medical program.

Government Service

Government service is a very comprehensive term since the numerous activities of modern government require all types of trained workers. For more and more of these positions a college education is essential as shown by the fact that only college graduates are eligible to take many civil service examinations today. Recently the United States Civil Service Commission inaugurated examinations for graduating seniors for such positions as Junior Biologist, Junior Economist, Junior Statistician, Junior Examination Assistant (for majors in psychology), Junior Administrative Technician, etc.

The distinctive governmental career field is that of public administration since the need for college trained personnel in administrative governmental posts of all types, political or non-political, is being increasingly recognized. While graduate training is desirable, an undergraduate program with a major in economics and a minor in government will provide the necessary foundation for a career in government service at home or abroad.

Journalism

Many of the nation's leading editors now advise students preparing for a career in journalism to obtain a broad liberal arts education rather than to concentrate on specific training in the routines of journalism in their undergraduate programs. It should be observed that opportunities in journalism today are not restricted to the urban or rural newspaper fields. Publishing houses, trade journals, house organs, advertising departments and agencies, and the various types of public relations work need college graduates with the same basic training.

Students who desire to enter journalism should choose the English-journalism major with minors from the following fields: economics, history, and government. They may elect courses in advertising in the College of Business Administration.

Law

Effective September 1, 1938, by a ruling of the Supreme Judicial Court of Massachusetts, in order to be eligible for admission to the bar an applicant must have completed certain general educational requirements before beginning a legal education. Briefly, this

general education must comprise graduation from a four-year high school and the completion of not less than half of the work accepted for the Bachelor's degree in a college approved by the Board of Bar Examiners.

The College of Liberal Arts offers two programs of pre-legal study designed to meet the above requirements.

One of these programs is specifically adapted to the needs of full-time day students. It comprises two years of full-time academic work which can be completed in a period of eighteen months under the accelerated program. This program follows the second year requirements of the major in economics but permits the student to elect the courses in history, government, and English which are recommended for the prospective student of law.

The other pre-legal program is designed to meet the needs of employed men and women. It is provided by offering a number of the regular courses during the evening and requires three years for completion.

(COMBINED PROGRAM)

Law — Liberal Arts

The combined curriculum in the College of Liberal Arts and the School of Law enables students to reduce by one year the time ordinarily required for obtaining the A.B. or S.B. and the LL.B. degree. Students who have completed before entering the School of Law a total of 105 semester hours of academic work of which at least 70 must have been earned in the Northeastern University College of Liberal Arts, and who have fulfilled all other graduation requirements, will receive the A.B. or S.B. degree upon the satisfactory completion of the full first year program in the Day Division of the School of Law. Students who enter the Evening Division of the School of Law will be eligible for the first degree upon satisfactory completion of the full equivalent of the first year of the day Law School program.

In both instances the first degree will be conferred at the next commencement following determination of eligibility for the first degree.

Library Work

Professional training for library work now demands at least one year of graduate study in a library school following a broad undergraduate foundation in liberal arts. While a major in English is usually advised, many opportunities are available for those who have concentrated in other fields.

Medicine

In order to be eligible for admission to a medical school according to the Committee on Education of the American Medical Association, a candidate must have attended an approved college and have included certain specific work in his program. The minimum course requirements are: six semester hours of English,

eight semester hours of inorganic chemistry, four semester hours of organic chemistry, eight semester hours of physics, eight semester hours of biology, eight semester hours of foreign languages, and twelve semester hours of non-scientific subjects. Since some medical schools impose additional requirements, pre-medical students should obtain full information from the medical school of their choice about the courses which must be offered for admission.

As a result of a recent wartime reduction in the entrance requirements of most medical schools, an accelerated pre-medical program has been arranged which requires two full academic years for completion.

Ministry

Preparation for the ministry today requires a theological school training following graduation from an approved college of liberal arts. The American Association of Theological Schools states that the appropriate foundation for a minister's later professional studies lies in a broad and comprehensive college education and that the normal place for a minister's professional study is the theological school. Recommended fields of study include: English, economics, education, government, history, foreign languages, one of the natural sciences, philosophy, psychology, and sociology.

While students who major in English, economics, psychology, or sociology will be able to arrange programs meeting the above recommendations, it is urged that pre-ministerial students obtain counsel from the dean of the theological school of their choice since some schools have further specific requirements.

Physics

As a result of the rapid developments in physics in recent years, there are increasing opportunities in applied physics on the technical staffs and in the research laboratories of the electrical, radio, optical, and other industries for the liberal arts graduate who has majored in physics. Graduate study is necessary for those who plan on research in pure physics.

Psychology

There is an increasing demand for persons trained in psychology in a wide range of occupational fields. In the field of education the demand is expanding for school psychologists at the grade-school level and for guidance workers and vocational counselors at the junior and senior high school level.

In the field of business and industry increasing numbers of psychologists are being employed in marketing research, in advertising, and in personnel departments. In state and federal governmental agencies clinical psychologists are employed in hospitals for the mentally ill, in child guidance clinics, in employment offices, and as research workers on problems relating to cultural

relations with other countries, to propaganda, and to education.

A large number of these positions require that the applicant have at least one year of graduate work and not a few require that he or she have a Ph.D. degree. For many others, however, college graduates with a major in psychology begin an internship with the firm or agency which employs them and then continue after this internship in a regular full-time position.

Social Service

Students who major in sociology lay the undergraduate foundation for numerous phases of work with either private or public agencies in the social service field, such as social case work, family welfare, child welfare, probation and parole, juvenile court, and settlement work, and relief administration. At least one year of graduate study in a school of social work is essential for those who desire full professional status.

Statistical Work

The growing emphasis upon statistics in business, education, social service, and government has opened a new career field for the student who majors in mathematics and obtains preparation in statistics. Similar training is necessary for students who wish to enter the actuarial field.

Teaching (Secondary School)

While a major in education is not offered in the College of Liberal Arts, a minor in this field is available which meets the recommended preparation of the Department of Education of the Commonwealth of Massachusetts for teachers in secondary schools. Students from other states should familiarize themselves with the requirements of their own state as these requirements are constantly being increased.

Most small secondary schools, in which the graduate must begin, expect teachers to be able to teach at least two, and often three, subjects. Consequently programs should provide for the common combinations of related subjects. A major should be selected from the following fields: biology, chemistry, English, mathematics, or physics.

Students who desire to become teacher-coaches should obtain a second minor in physical education.

Teaching (College)

Students who plan to enter the college teaching profession will find that each of the major programs affords an excellent preparation for graduate study in the leading universities of the country. Since graduate schools usually require a reading knowledge of French or German, frequently both, students should elect adequate work in these languages. Seminar courses and thesis work are strongly recommended for their training in research techniques.

Admission Requirements

Applicants for admission to the freshman class must qualify by one of the following methods:

1. Graduation from an approved course of study in an accredited secondary school, including prescribed subjects listed below.

2. Completion of fifteen acceptable secondary school units with a degree of proficiency satisfactory to the Department of Admissions.

3. Examinations.

(Certificate of entrance examinations passed for admission to recognized colleges and technical schools may be accepted.)

Prescribed Subjects for Admission

College of Liberal Arts

The College of Liberal Arts offers courses leading either to the A.B. or to the S.B. degree. According to the degree which he expects to receive, the student will present for admission one or the other of the groups of prescribed subjects listed below.

A.B. Curriculum		S.B. Curriculum	
	Units		Units
English (4 years)	3	English (4 years)	3
Foreign Language	3	†Mathematics	2 or 3
(Ancient or Modern)		Natural Science	1
Social Studies	2	*Electives	8 or 9
*Electives	7		
	15		15
Total		Total	

A unit is a credit given to an acceptable secondary school course which meets at least four times a week for periods of not less than forty minutes each throughout the school year.

Entrance examinations are not required of students whose transcripts of record are acceptable, but the Department of Admissions reserves the right to require a candidate to be present for an examination in any subjects that it may deem necessary because of some weakness in the secondary school record.

*Not less than four of the "electives" must be in one or more of the following academic branches: Languages, Natural Science, Mathematics, Social Sciences, History.

†Students expecting to major in chemistry, mathematics, or physics must offer 3 units.

Other Requirements

These formal requirements are necessary and desirable in that they tend to provide all entering students with a common ground upon which the first year of the college curriculum can be based. But academic credits alone are not an adequate indication of a student's ability to profit by a college education. Consequently, the Department of Admissions takes into consideration, along with the formal requirements, many other factors regarding candidates for the freshman class. The Committee considers a student's interests and aptitudes in so far as they can be determined, capacity for hard work, attitude toward classmates and teachers in high school, physical stamina, and most important of all — character. In this way the University seeks to select for its student body those who not only meet the academic admission requirements but who also give promise of acquitting themselves creditably in the rigorous program of training afforded by the Co-operative Plan and of later becoming useful members of society.

Personal Interview

Candidates for admission should communicate with the Director of Admissions, who will advise them frankly on the basis of past experience. A personal interview is always preferred to correspondence, and parents are urged to accompany the applicant whenever this is possible. Effective guidance depends in large measure upon a complete knowledge of a candidate's background and problems. Parents invariably are able to contribute much information that aids the admissions officer in arriving at a decision.

Candidates are urged to visit the office of Admissions for personal interview if it is possible for them to do so before submitting their applications. Office hours of the Department are from 9:00 A.M. to 4:00 P.M. daily; Saturdays to 12:00 M. The Director of Admissions will interview applicants on Wednesday evenings but by appointment only.

Application for Admission

Each applicant for admission is required to fill out an application blank stating previous education, as well as the names of persons to whom reference may be made.

An application fee of five dollars (\$5.00) is required when the application is filed. This fee is non-returnable.

The last page of this catalog is in the form of an application blank. It should be filled out in ink and forwarded with the required five dollar fee to Director of Admissions, Northeastern University, Boston, Mass. Checks should be made out to Northeastern University.

Upon receipt of the application, properly filled out, the college at once looks up the applicant's references and secondary school records. When replies have been received to the various inquiries, the applicant is informed as to his eligibility for admission.

An application should be filed at least a month prior to the date of registration.

The University reserves the right to place any entering student upon an indefinite trial period. Reclassification would be determined upon the academic success of the student.

Registration

Eligibility for admission does not constitute registration. Freshmen will register at the University on Sept. 25, 1944, March 12, 1945, June 11, 1945, Sept. 10, 1945. Students are not considered to have met the requirements for admission until they have successfully passed the required physical examination.

Advanced Standing

Students transferring from approved colleges will be admitted to advanced standing provided their records warrant it. Whenever a student enters with advanced standing and later proves to have had inadequate preparation in any of his prerequisite subjects, the faculty reserves the right to require the student to make up such deficiencies.

Applicants seeking advanced standing should arrange to have transcripts of their previous college records forwarded with their initial inquiry. Students admitted to advanced standing are not eligible for placement at co-operative work until they have completed a full year of academic work at the University.

Entrance Examinations

Students who are deficient in required units for admission may remove these deficiencies by examination. Such examinations are held at the University unless special arrangements are made with the Department of Admissions to administer them elsewhere. Students are advised to take such examinations on the earliest possible date in order that any deficiencies which they fail to clear may be made up in time to permit registration with the desired class and division.

The time of examinations is as follows:

10:00 A.M. to 12:00 M.

1:00 P.M. to 3:00 P.M.

During the current year examinations will be given approximately three weeks before each registration date.

Outline of Freshman Courses

The first year is a period of full-time study during which the student must demonstrate fitness for the program which has been elected. Students who are unsuccessful in the basic courses of the freshman year will not be permitted to continue with their advanced program, but will be advised to change their goal and type of training. In some instances this will mean change to another curriculum at Northeastern; in others, transfer to another institution. *The freshman courses are so arranged as to permit change of objective at the end of the first year with a minimum loss of time.*

Freshman Programs

1. For students majoring in Economics, English, English-Journalism, Psychology, Sociology, or taking the Pre-Legal program.

No.	Course	C.H.	No.	Course	C.H.
E 1-A	English I.	3	E 2-A	English I.	3
H 1	History of Civilization..	4	H 2	History of Civilization..	4
Gv 1	American Government.	3	Gv 2	American Government.	3
P 1-A	Surv. of Phys. Science or		P 2-A	Surv. of Phys. Science or	
B 1	General Zoology.....	4	B 2	General Botany.....	4
F3, G 1,			F 4, G 2,		
or Sp 1	French, German, or		or Sp 2	French, German, or	
	Spanish.....	3		Spanish.....	3
PE 1	Hygiene.....	1		Orientation.....	1
	Physical Training..	2		Physical Training.....	2
		20			20

2. For students majoring in Chemistry, Mathematics, and Physics.

No.	Course	C.H.	No.	Course	C.H.
E 1-A	English I.	3	E 2-A	English I.	3
M 1, M 3	Algebra, Trigonometry	5	M 4	Analytic Geometry.....	5
P 1	Physics I.....	3	P 2	Physics I.....	3
Ch 1	General Chemistry.....	6	Ch 2	General Chemistry.....	6
F 3, G 1,			F 4, G 2,		
or Sp 1	French, German, or		or Sp 2	French, German, or	
	Spanish.....	3		Spanish.....	3
PE 1	Hygiene.....	1		Orientation.....	1
	Physical Training.....	2		Physical Training.....	2
		23			23

3. For students majoring in Biology, or taking the Pre-Dental or Pre-Medical program.

No.	Course	C.H.	No.	Course	C.H.
E 1-A	English I.	3	E 2-A	English I.	3
M 1, M 3	Algebra, Trigonometry .	5	M 4	Analytic Geometry.....	5
B 1	General Zoology.....	4	B 2	General Botany.....	4
Ch 1	General Chemistry.....	6	Ch 2	General Chemistry.....	6
F 3, G 1,			F 4, G 2,		
or Sp 1	French, German, or		or Sp 2	French, German, or	
	Spanish.....	3		Spanish.....	3
PE 1	Hygiene.....	1		Orientation.....	1
	Physical Training.....	2		Physical Training.....	2
		24			24

Requirements for Graduation

In order to qualify as a candidate for the A.B. or S.B. degree a student must complete with a degree of proficiency acceptable to the faculty a total of not less than 135 semester hours of credit.* College attendance for 128 weeks is needed to fulfill this requirement.

The above total must include:

1. The prescribed program for the freshman year.
2. The courses specified in the upperclass curriculum for the student's major field. (See pages 76 to 78.)
3. From twelve to sixteen semester hours, representing six term courses, in each of two minor fields.
4. Twelve semester hours in foreign language. The elementary course in a language will not be accepted in fulfillment of this requirement unless followed by a second year in the same language.

Graduation with Honor

Candidates who have achieved distinctly superior attainment in their academic work will be graduated with honor. Upon special vote of the faculty a limited number of this group may be graduated with high honor or with highest honor. Students must have been in attendance at the University at least three years before they may become eligible for honors at graduation.

*Students who undertake any co-operative work assignment must also meet the requirements of the Department of Co-operative Work before they become eligible for their degrees.

Curricular Requirements

The following fields of study are approved as major fields in the College of Liberal Arts: biology, chemistry, economics, English, English-journalism, mathematics, physics, pre-medical (biology-chemistry), psychology, and sociology. In addition two-year programs are approved for pre-dental, pre-medical, and pre-legal students.

Required *upperclass* courses for students in each field are listed below. Upon petition to the faculty, substitutions may be permitted in some instances.

Biology

COURSES IN BIOLOGY	B 3 Invertebrate Zoology	B 4 Invertebrate Zoology
	B 5 Vertebrate Zoology	B 6 Vertebrate Zoology
	B 17 Mammalian Anatomy	B 18 Mammalian Anatomy
	B 61 Seminar	B 62 Seminar
	fourteen elective semester hours.	
COURSES IN OTHER FIELDS	six semester hours in French or German, eight semester hours in physics, six semester hours in English.	

Chemistry

COURSES IN CHEMISTRY	Ch 9 Qualitative Analysis	Ch 12 Quantitative Analysis
	Ch 11 Qualitative Analysis Laboratory	Ch 14 Quantitative Analysis Laboratory
	Ch 13 Quantitative Analysis	
	Ch 17 Quantitative Analysis Laboratory	
	Ch 31 Organic Chemistry	Ch 32 Organic Chemistry
	Ch 33 Organic Chemistry Laboratory	Ch 34 Organic Chemistry Laboratory
	Ch 35 Organic Chemistry	Ch 40 Physical Chemistry
	Ch 39 Organic Chemistry Laboratory	
	Ch 45 Physical Chemistry	Ch 46 Physical Chemistry
	Ch 51 Sources of Information	Ch 48 Colloidal Chemistry
COURSES IN OTHER FIELDS	Ch 63 Advanced Chemistry	Ch 64 Advanced Chemistry
	six semester hours in French or German, six semester hours in mathematics, twelve semester hours in physics, and sixteen semester hours in non-scientific fields.	

Economics

COURSES IN ECONOMICS	Ec 3 Economic Principles	Ec 4 Economic Principles
	Ec 5 Economic Problems	Ec 6 Economic Problems
	Ec 7 Money and Banking	Ec 8 Business Cycles
	Ec 11 Labor Problems	Ec 14 International Economic Relations
	Ec 15 History of Economic Thought	Ec 16 Advanced Economic Theory
	Ec 17 Statistics	Ec 18 Statistics
	six elective semester hours.	
COURSES IN OTHER FIELDS	six semester hours in modern languages, six semester hours in English, twelve semester hours in the allied social sciences.	

English

COURSES IN ENGLISH	E 5 Advanced Composition	E 6 Advanced Composition
	E 15 English Literature	E 16 English Literature
	E 17 Drama before Shakespeare	E 18 Chaucer
	E 19 Shakespeare	E 20 Shakespeare
	E 23 Seventeenth and Eighteenth Century Prose	E 24 Nineteenth Century Prose
COURSES IN OTHER FIELDS	E 25 American Literature	E 26 American Literature
	E 29 Great European Writers	E 30 Great European Writers
	six semester hours in modern languages, sixteen semester hours in the social sciences.	

English-Journalism

COURSES IN ENGLISH	E 5 Advanced Composition	E 6 Advanced Composition
	E 9 Journalism I	E 10 Journalism I
	E 11 Journalism II	E 12 Journalism II
	E 15 English Literature	E 16 English Literature
	E 23 Seventeenth and Eighteenth Century Prose	E 24 Nineteenth Century Prose
COURSES IN OTHER FIELDS	E 25 American Literature	E 26 American Literature
	E 29 Great European Writers	E 30 Great European Writers
	six semester hours in modern languages and sixteen semester hours in the social sciences.	

Mathematics

COURSES IN MATHEMATICS	M 5 Differential Calculus	M 6 Integral Calculus
	M 7 Differential Equations I	M 8 Differential Equations II
	M 15 Advanced Calculus	M 16 Advanced Calculus
	M 17 Series	M 18 Theory of Equations
COURSES IN OTHER FIELDS	six elective semester hours.	
	six semester hours in French or German, twelve semester hours in physics, and ten semester hours in non-scientific fields.	

Physics

COURSES IN PHYSICS	P 3 Physics II	P 4 Physics II
	P 5 Physics Laboratory	P 6 Physics Laboratory
	P 9 Optics	P 10 Optics
	P 13 Acoustics	P 14 Acoustics
	P 15 Modern Physics	P 16 Modern Physics
COURSES IN OTHER FIELDS	six elective semester hours.	
	six semester hours in French or German, twelve semester hours in mathematics, and ten semester hours in non-scientific fields.	

Pre-Dental

(See page 66)

Pre-Legal

(See page 67)

Pre-Medical (Biology-Chemistry)

COURSES IN BIOLOGY	*B 3 Invertebrate Zoology	*B 4 Invertebrate Zoology
	B 5 Vertebrate Zoology	B 6 Vertebrate Zoology
COURSES IN CHEMISTRY	*B 17 Mammalian Anatomy	*B 18 Mammalian Anatomy
	six elective semester hours.	
	Ch 25 Organic Chemistry	Ch 26 Organic Chemistry
COURSES IN OTHER FIELDS	Ch 27 Organic Chemistry Laboratory	Ch 28 Organic Chemistry Laboratory
	six semester hours in French or German, eight semester hours in physics, twelve semester hours in non-scientific fields.	

Psychology

COURSES IN PSYCHOLOGY	Ps 1 Introduction to Differential Psychology	Ps 2 General Psychology
	Ps 3 Experimental Psychology	Ps 4 Differential Psychology
	Ps 5 Educational Psychology	Ps 8 Social Psychology, Theory and Methods
	Ps 7 Social Psychology of Everyday Life	Ps 10 Abnormal Psychology
	Ps 9 Psychology of Personality	Ps 14 Advanced Experimental Laboratory
COURSES IN OTHER FIELDS	Ps 13 Psychological Testing	
	six elective semester hours in psychology or sociology.	
	six semester hours in French or German, six semester hours in English, twelve semester hours in allied social sciences.	

Sociology

COURSES IN SOCIOLOGY	S 1 Introduction to Sociology	S 2 Principles of Sociology
	S 3 Social Problems	S 4 Social Pathology
	S 5 Criminology	S 6 Penology
	S 7 Principles of Social Ethics	S 8 Problems of Social Ethics
	S 9 The Family	S 10 The Family
	S 11 Social Control	S 12 Social Progress
	S 15 History of Sociological Thought	
COURSES IN OTHER FIELDS	four elective semester hours in sociology or psychology.	
	six semester hours in modern languages, six semester hours in English, twelve semester hours in allied social sciences.	

Minor Fields

Students may elect their minor fields after consultation with their faculty advisers. In addition to the major fields listed the following subjects are available as minors: education, French, German, government, history, philosophy, physical education, and Spanish.

*Not required in two-year program. See page 68.

Graduate Study

Graduate work in physics and in chemistry is offered to properly qualified students desiring to undertake advanced study leading to the degree of Master of Science. Candidates for admission to this program must be high ranking students who have completed, or will have completed prior to admission to the graduate program, the requirements for the Bachelor of Science degree with major in chemistry or physics at an institution of recognized standing. At the present time the program is limited to teaching fellows at Northeastern University.

Requirements for the Master of Science Degree

Candidates for the degree of Master of Science in Chemistry or Master of Science in Physics must have completed satisfactorily 30 semester hours of study beyond that required for the Bachelor's degree. Of these, 18 semester hours (including thesis) must be graduate courses in the major field of chemistry or physics; the remaining 12 credits may be earned in a minor field.

The graduate courses are listed under the departments giving graduate work. The minor credits may be selected from graduate courses or from certain advanced undergraduate courses called "B" courses. (Graduate students must obtain a grade of B or better to receive credit for "B" courses.)

Candidates are also required to complete a satisfactory thesis as a partial requirement for the Master's degree. Theses must be completed in the field of major study and will be credited as eight semester hours toward the major requirement. Theses must be completed at least four weeks in advance of the date on which the degree is to be awarded.

Finally, candidates are required to pass satisfactorily a comprehensive examination which may be written or oral at the discretion of the department concerned.

List of "B" Courses

The "B" courses are divided into two groups. The first group is comprised of subjects which may be elected to complete the requirements for minor credits. The second group includes subjects approved for graduate study only in limited amount.

The individual programs of study must have the approval of the Director of Graduate Study who also acts as registration officer for graduate students.

B Courses Group I

No.	Course	Credits
B 3	Invertebrate Zoology	2
B 4	Invertebrate Zoology	2
B 5	Vertebrate Zoology	2
B 6	Vertebrate Zoology	2
B 15	Parasitology	2
B 16	Parasitology	2
B 17	Mammalian Anatomy	2
B 18	Mammalian Anatomy	2
B 25	General Entomology	3
B 26	Economic Entomology	3
Ch 41	Physical Chemistry	3½
Ch 42	Physical Chemistry	3½
Ch 63	Advanced Chemistry	2
Ch 64	Advanced Chemistry	3
Ch E 5	Unit Operations Lab.	1½
Ch E 6	Unit Operations Lab.	1½
Ch E 11	Chem. Eng. Thermodynamics	2
M 7	Differential Equations I.	3
M 8	Differential Equations II.	3
M 15	Advanced Calculus	3
M 16	Advanced Calculus	3
M 17	Series	3
M 18	Theory of Equations	3
P 9	Optics	3
P 10	Optics	3
P 15	Modern Physics	3
P 16	Modern Physics	3
P 17	Electronics	3
P 18	Electronics	3

B Courses Group II

Ec 11	Labor Problems	3
Ec 14	International Economic Relations	3
Ec 15	History of Economic Thought	2½
Ec 16	Advanced Economic Theory	2½
Ed 1	History of Education	2½
Ed 2	History of Education	2½
Ed 3	Educational Measurements	2½
Ed 4	Educ. Org. and Adm.	2½
Gv 3	Comparative Government	2
Gv 4	Comparative Government	2
Gv 7	Origins of Political Theory	2½
Gv 8	Modern Political Theory	2½

No.	Course	Credits
H 7	England to 1688.....	2½
H 8	England Since 1688.....	2½
H 11	Latin American History.....	2½
H 12	Latin American History.....	2½
H 15	Far Eastern Relations.....	2½
Ph 3	History of Philosophy.....	2
Ph 4	History of Philosophy.....	2
Ps 5	Educational Psychology.....	3
Ps 7	Social Psychology of Everyday Life.....	2½
Ps 8	Social Psychology, Theory and Methods...	2½
S 7	Principles of Social Ethics.....	2½
S 8	Problems of Social Ethics.....	2½

Synopses of Courses of Instruction

On the pages which follow are given the synopses of courses offered in the several curricula of the college. Courses offered in the first semester bear odd numbers, and those offered in the second semester bear even numbers.

The term prerequisite indicates a course that must be completed with a passing grade before a student will be permitted to register for the advanced course to which it applies. The term preparation indicates a course of such a preparatory nature that students undertaking an advanced course, without having had the preparation course specified, will ordinarily find themselves greatly handicapped, and may not register in the advanced course without the consent of the instructor.

Freshman courses extend over a full semester of 16 weeks. Upperclass courses are uniformly 12 weeks in length each term. Unless otherwise noted all undergraduate courses meet for three class periods each week.

The University reserves the right to withdraw any course in which there is insufficient enrollment.

Biology

Botany Zoology

B 1 General Zoology

An introductory course dealing with the basic principles of zoology. A survey of the main types of animals; their classification, structure, life history, distribution, and economic value. The laboratory work illustrates the lectures.

2 class hours, 2 lab. hours

B 2 General Botany

An introductory course dealing with the basic principles of botany. A general survey of the more important plant types throughout the vegetable kingdom; their classification, structure, life history, distribution, and economic value. The fundamentals of plant physiology are stressed. The laboratory work illustrates the lectures.

2 class hours, 2 lab. hours

B 3 Invertebrate Zoology

This course deals with the comparative development and structure of the organic systems of invertebrate animals as represented by

the following phyla: Protozoa, Porifera, Coelenterata, Ctenophora, Platyhelminthes, Nematelminthes, Trochelminthes, and Molluscoidea; and their biological and ecological relationships. The laboratory work consists of detailed dissection of representative types.

Prerequisite: B 1

2 class hours, 3 lab. hours

B 4 *Invertebrate Zoology*

Continues and presupposes course B 3. In this part of the course, the lectures deal with the comparative development and structure of the various organ systems of invertebrate animals as represented by the following invertebrate phyla: Coelhelminthes, Mollusca, Arthropoda, and Echinodermata; and their biological and ecological relationships. The laboratory work consists of detailed dissection of representative types.

Preparation: B 3

2 class hours, 3 lab. hours

B 5 *Vertebrate Zoology*

This course deals with the comparative anatomy of the integument; the skeletal, muscular, digestive and respiratory systems of the principal classes of vertebrates. The laboratory work consists of detailed dissection of representative types.

Prerequisite: B 1

2 class hours, 3 lab. hours

B 6 *Vertebrate Zoology*

Continues and presupposes course B 5. In this part of the course, the lectures deal with the comparative anatomy of the vascular, excretory, reproductive and nervous systems together with the organs of special sense of the principal classes of vertebrates. The laboratory work consists of detailed dissection of representative types.

Preparation: B 5

2 class hours, 3 lab. hours

B 7 *Animal Physiology*

This course deals with the functions of vertebrates with particular emphasis on mammalian and human physiology. Demonstrations are given from time to time and are arranged to correspond as closely as possible with the lecture work.

Preparation: B 6

3 class hours

B 8 *Animal Physiology*

Continues and presupposes B 7.

Preparation: B 7

3 class hours

B 9 *Principles of Genetics*

This course deals with the laws of variation and inheritance; their application to man and to domestic animals and plants.

Prerequisite: B 1, B 2

3 class hours

B 10 *Principles of Genetics*

Continues and presupposes B 9.

Preparation: B 9

3 class hours

B 11 *Animal Histology*

The lectures deal with the normal microscopic anatomy of the cell, histogenesis, and the fundamental tissues of various invertebrates and vertebrates. The laboratory work illustrates the lectures by means of microscopic preparations.

Prerequisite: B 6

2 class hours, 2 lab. hours

B 12 *Animal Histology*

Continues and presupposes course B 11. In this part of the course a detailed study is made of the normal microscopic anatomy of the organs of the lower and higher vertebrates. The laboratory work illustrates the lectures by means of microscopic preparations.

Preparation: B 11

2 class hours, 2 lab. hours

B 13 *Vertebrate Embryology*

The lectures deal with the early and late stages of development of the Amphioxus, the Teleost, and the frog. The laboratory work illustrates the lectures.

Prerequisite: B 6

2 class hours, 2 lab. hours

B 14 *Vertebrate Embryology*

Continues and presupposes B 13. In this part of the course the lectures deal with the early and late stages of development of the chick and pig. The laboratory work illustrates the lectures.

Preparation: B 13

2 class hours, 2 lab. hours

B 15 *General Parasitology*

This course deals with the more important species of parasites and their relation to disease in man and the domestic animals. In this part of the course the parasitic protozoa and flat worms are considered.

Prerequisite: B 3, B 4

2 class hours, 2 lab. hours

B 16 General Parasitology

Continues and presupposes B 15. In this part of the course the parasitic round worms and arthropods are considered.

Preparation: B 15

2 class hours, 2 lab. hours

B 17 Mammalian Anatomy

An advanced laboratory course in the dissection of a mammal. In this part of the course, the skeletal, muscular, digestive, and respiratory systems are considered.

Prerequisite: B 6

1 class hour, 6 lab. hours

B 18 Mammalian Anatomy

Continues and presupposes B 17. In this part of the course, the urogenital, circulatory, and nervous systems are considered together with the organs of special sense.

Preparation: B 17

1 class hour, 6 lab. hours

B 19 Histological Technique

This course is designed to present the fundamentals of histological technique. Lectures deal with the various methods of fixation, clearing, hardening, embedding, section cutting, and staining of various vertebrate, invertebrate, and plant tissues. Emphasis is laid upon the laboratory work, which consists of preparing histological slides.

Preparation: B 12

1 class hour, 6 lab. hours

B 20 Histological Technique

Continuation of course B 19.

Preparation: B 19

1 class hour, 6 lab. hours

B 21 History of Biology

A course treating the development of biological sciences from the earliest times to the present, and tracing the history of biological investigations.

3 class hours

B 22 History of Biology

A continuation of B 21.

3 class hours

B 25 General Entomology

This course deals with the structure, classification, habits, life histories, and distribution of insects. Detailed laboratory work of representative types.

Prerequisite: B 1

3 class hours, 3 lab. hours

B 26 Economic Entomology

Lectures, conferences, and laboratory work. This course deals with the life histories and habits of injurious insects and of means for their control.

Preparation: B 1, B 25

3 class hours, 3 lab. hours

B 61 Seminar

Assigned readings and reports on selected topics. May be elected with the consent of the department by qualified seniors majoring in biology.

B 62 Seminar

A continuation of B 61.

Preparation: B 61

B 65 Thesis

See statement on Theses, page 136.

B 66 Thesis

A continuation of B 65.

Chemistry

Ch 1 General Chemistry

The fundamental ideas of matter and energy; the properties of gases, liquids, and solids; molecular weights; equations, atomic structure, classification of the elements; ionic reactions; the chemistry of the non-metals; and radioactivity are among the topics which are covered in the course.

3 class hours, 3 lab. hours

Ch 2 General Chemistry

A continuation of Ch 1. Modern ideas covering the theory of solutions of electrolytes are discussed together with experimental facts. The chemistry of the metals is covered thoroughly, and

time is devoted to an introduction to organic chemistry. The latter part of the course is given to qualitative analysis with particular emphasis on the laboratory work.

Preparation: Ch 1

3 class hours, 3 lab. hours

Ch 9 Qualitative Analysis

The object of this course is to give the student knowledge of the various fundamental qualitative laws and principles. A portion of the time is devoted to the formulation of numerical terms which are essential to the understanding of the mass action law, ionic equilibria, solubility product, hydrolysis, and redox instants. The use of the newer spot tests is stressed and, where possible, their reactions explained. Whenever necessary, lectures demonstrating the various semi-micro techniques are given, as well as those designed to illustrate more fundamental properties of solutions.

Prerequisite: Ch 1, Ch 2

4 class hours

Ch 11 Qualitative Analysis Laboratory

This course, which is carried out on a semi-micro scale, applies the material covered in Ch 9 to actual problems. After some preliminary experiments, certain procedures are combined and the separations and identifications made on both known and unknown solutions. Finally, these are combined into a complete, systematic scheme which is applied to artificially prepared mixtures and industrial materials. Careful manipulations, thoroughness in observation, and accuracy in arriving at conclusions are expected of each student.

Must be taken concurrently: Ch 9

10 lab. hours

Prerequisite: Ch 1, Ch 2

Ch 12 Quantitative Analysis

It is the purpose of this course to give to the student a realization of the scientific development of quantitative methods. Each of the major operations such as weighing, measurement of volumes, titration, filtration, ignition, and combustion, is considered from the standpoint of the theoretical principles involved, and with due consideration of the manipulative technique necessary.

This is followed by the combination of these operations and their application to actual analysis, including a comprehensive study of volumetric methods and of the more elementary parts of gravimetric analysis.

As the correct calculation of analytical results is of no less importance than the actual procedures of analysis, a number of problems forms a very important part of the course.

Preparation: Ch 9

3 class hours

Must be taken concurrently: Ch 14

Ch 13 Quantitative Analysis

This course, a continuation of Ch 12, is similarly conducted. After consideration of the more advanced parts of gravimetric analysis and of systematic mineral procedures, the remainder of the course consists of a critical discussion of common technical methods, including the standard ones for the analysis of steel, non-ferrous alloys, fuels, oils, gas, water, fertilizers, foods, etc.

Preparation: Ch 12

3 class hours

Must be taken concurrently: Ch 15

Ch 14 Quantitative Analysis Laboratory

This is a laboratory course intended to illustrate by actual use the various analytical methods considered in Ch 12. After certain preliminary experiments designed to acquaint the student with the apparatus used, volumetric analysis, including acidimetry and alkalimetry, oxidation, reduction, and precipitation methods are taken up. This is followed by simple gravimetric analysis.

Preparation: Ch 11

7 lab. hours

Must be taken concurrently: Ch 12

Ch 15 Quantitative Analysis Laboratory

This course includes not only the usual illustrative gravimetric determinations, but also electrolytic, electrometric, combustion, and optical methods.

In the latter half of the course actual industrial methods are used so that at its completion the students should be able to perform satisfactorily any ordinary analysis.

Preparation: Ch 14

9 lab. hours

Must be taken concurrently: Ch 13

Ch 25 Organic Chemistry

A study of the reactions and properties of aliphatic compounds. Class relationships, structural formulas, and reaction mechanisms are discussed in detail. Not open to students majoring in Chemistry.

Prerequisite: Ch 1, Ch 2

4 class hours

Must be taken concurrently: Ch 27

Ch 26 Organic Chemistry

A continuation of Ch 25 dealing with the preparation and properties of the aromatic compounds. Not open to students majoring in Chemistry.

Prerequisite: Ch 1, Ch 2

4 class hours

Preparation: Ch 25

Must be taken concurrently: Ch 28

Ch 27 Organic Chemistry Laboratory

Preparations and reactions of the aliphatic compounds. Not open to students majoring in Chemistry.

Prerequisite: Ch 1, Ch 2

5 lab. hours

Must be taken concurrently: Ch 25

Ch 28 Organic Chemistry Laboratory

Preparations and reactions of the aromatic compounds. Not open to students majoring in Chemistry.

Prerequisite: Ch 1, Ch 2

5 lab. hours

Preparation: Ch 27

Must be taken concurrently: Ch 26

Ch 31 Organic Chemistry

A study of the basic principles of the aliphatic organic compounds. The resemblance of classes is stressed, and emphasis is placed on genetic charts. The industrial significance of the subject is discussed to show the practical nature of organic chemistry.

Preparation: Ch 40

3 class hours

Must be taken concurrently: Ch 33

Ch 32 Organic Chemistry

A continuation of Ch 31, dealing with the preparation and characteristic reactions of the aromatic organic compounds. Special attention is given to polymerization, diazotization, dyes, and the use of catalysts, nitration, and sulphonation.

A few of the more important heterocyclic compounds are studied.

Preparation: Ch 31

3 class hours

Must be taken concurrently: Ch 34

Ch 33 Organic Chemistry Laboratory

Preparations and reactions designed to teach the laboratory technique involved in organic chemistry. The method of keeping notes in the work performed and reactions involved is stressed.

Preparation: Ch 40

5 lab. hours

Must be taken concurrently: Ch 31

Ch 34 Organic Chemistry Laboratory

This is a continuation of Ch 33. The preparations in this course serve to acquaint the student with such types of chemical reactions as sulphonation, the Grignard reaction, the Perkins' reaction, Skraup's synthesis, the Friedel-Crafts' reaction, and the preparation of dyes

In addition to the manipulation techniques taught in Ch 33 this course introduces the use of vacuum distillations, fractional crystallization, and separations by physical and chemical means.

Preparation: Ch 33

5 lab. hours

Must be taken concurrently: Ch 32

Ch 35 Organic Chemistry

A continuation of Ch 32, this course includes a study of the preparation and reactions of heterocyclic and alicyclic compounds.

Preparation: Ch 32

3 class hours

Must be taken concurrently: Ch 37

Ch 37 Organic Chemistry Laboratory

The purpose of this course is to familiarize the student with the chemical and physical tests used in qualitative organic analysis. A series of experiments, based on the classification of reactions of organic compounds, serves as a basis for the examination of simple liquid and simple solid compounds and the preparation of suitable derivatives of them.

Preparation: Ch 34

8 lab. hours

Must be taken concurrently: Ch 35

Ch 40 Physical Chemistry

This course begins with a short resume of the field of physical chemistry and its relationship to the other courses in chemistry and chemical engineering. Atomic and molecular weights, and the properties of gases, liquids, solids, ionized, non-ionized, and colloidal solutions are then taken up.

Prerequisite: Ch 12, Ch 14

3 class hours, 2 lab. hours

Preparation: Ch 13, Ch 15

Ch 41 Physical Chemistry

A continuation of Ch 40, this course includes a consideration of the following topics: rates of reaction, homogeneous and heterogeneous equilibrium, and thermochemistry.

Prerequisite: Ch 13, Ch 15

4 class hours, 4 lab. hours

Preparation: Ch 40

Ch 42 Physical Chemistry

A continuation of Ch 41 including electrical conductance, electrolytic equilibrium, electrolysis, photochemistry, and atomic structure.

Preparation: Ch 41

4 class hours, 4 lab. hours

Ch 48 Colloidal Chemistry

A study of the preparation and properties of suspensoids, emulsoids, emulsions, and gels.

Prerequisite: Ch 41

3 class hours, 2 lab. hours

Ch 51 Sources of Information

This course is intended to acquaint the chemical student with the constantly increasing volume of scientific literature pertaining to the field of chemistry.

After a brief outline of the entire field of scientific literature and a description of various methods of library procedure, the various available sources of scientific information are investigated. A series of individual library problems, in which the student is required to apply the information obtained in the classroom, forms a very important part of the course.

Prerequisite: Ch 1, Ch 2

1 class hour

Ch 52 History of Chemistry

A study of the development of scientific theories and contributions of workers in the field of chemistry. Elective for students majoring in Chemistry.

3 class hours

Ch 63 Advanced Chemistry

A survey of the most recent developments in physical chemistry and inorganic chemistry.

Prerequisite: Ch 42

3 class hours

Ch 64 Advanced Chemistry

A survey of the most recent developments in organic chemistry theory and practice.

Prerequisite: Ch 35

3 class hours, 3 lab. hours

Ch 65 Thesis

Original experimental work carried out under the direction of some member of the chemistry department staff. Elective for qualified students majoring in Chemistry.

Prerequisite: Ch 42

9 lab. hours

Ch 66 Thesis

A continuation of Ch 65.

Prerequisite: Ch 42

12 lab. hours

Ch 101 *Advanced Physical Chemistry*

A study of advanced topics in physical chemistry.

(For graduate students only.)

3 class hours

Ch 102 *Advanced Physical Chemistry*

A continuation of Ch 101.

(For graduate students only.)

3 class hours

Ch 103 *Advanced Organic Chemistry*

A study of special topics in advanced organic chemistry.

(For graduate students only.)

3 class hours

Ch 104 *Advanced Organic Chemistry*

A continuation of Ch 103.

(For graduate students only.)

3 class hours

Ch 105 *Graduate Thesis*

Thesis work for graduate students.

Ch 106 *Graduate Thesis*

Thesis work for graduate students.

Ch 107 *Graduate Thesis*

Thesis work for graduate students.

Ch 108 *Graduate Thesis*

Thesis work for graduate students.

Co-ordination

C 1 *Vocational Conference*

This course is designed to bring about analytical thinking and systematic planning of the "after-graduation-employment" problem. It is conducted as an open discussion class by the Department of Co-operative Work. Each co-ordinator has in class those students whom he has placed and supervised on co-operative work. Each student analyzes and applies to himself as the "product" the fundamental principles of merchandising. Wherever practicable, prominent men who are leaders in the fields of employment counselling business or engineering present the

employers' viewpoints. Thus the graduating seniors are brought face to face during the year with one of the most important and perplexing problems of life, namely, how to "sell their services," thereby aiming to bring a co-ordinated training of theory and practice to a logical conclusion.

2 class hours

C 2 Vocational Conference

This course is the sequel to C 1 and consists of the practical application of the techniques of job-getting which have been analyzed and discussed in that course. It is conducted on a conference rather than on a class basis, the major portion of the time being devoted to the collection of employment prospects, to the planning and writing of letters to and securing interviews with prospective employers. It is intended that this course shall culminate in the attainment by each student of his after-graduation job.

2 class hours

Economics

Ec 1 Economic Geography

In order to provide an adequate background for the study of economics this first course emphasizes the economic resources of our country and the part played by these resources in the development of our modern industrial society. The course is more concerned with promoting the comprehension of basic concepts than with stressing encyclopedic knowledge of masses of details. In the latter part of the semester frequent use is made of motion pictures to illustrate the processes and peculiar economic characteristics of specific industries.

4 class hours

Ec 2 Commercial and Industrial History of the U. S.

This course is designed to complete the factual background for the study of theoretical economics. The economic development of the United States is traced from the colonial period to the present with special emphasis upon the period since the Civil War. Stress is laid upon the importance of economic factors and changes in our history in the description of the development of manufacturing, agriculture, domestic and foreign commerce, finance and banking, transportation and labor organizations. Consideration is given to European developments which have been closely related to those of the United States.

4 class hours

Ec 3 Economic Principles

A thorough grounding in the fundamental principles and laws of economics is the aim of this basic course. The main topics include the nature and organization of production, the nature and importance of wants, the relation of money and prices, the process of exchange, and the nature of international trade.

3 class hours

Ec 4 Economic Principles

A continuation of Ec 3. A careful analysis is made of the determination of price under conditions of competition and monopoly, and of the distribution of wealth and income in the form of wages, economic rent, interest, and profits. The elements of insurance are discussed in connection with profits.

Preparation: Ec 3

3 class hours

Ec 5 Economic Problems

In this course the application of economic principles to some of the major economic problems of modern society is emphasized. The problems studied include consumption, protective tariffs and subsidies, labor problems such as unemployment and labor unions, and the business cycle.

Preparation: Ec 3

3 class hours

Ec 6 Economic Problems

A continuation of Ec 5. Among the problems considered are the following: price stabilization, the agricultural problem, the relation of government to business, including control of monopolies and public utilities, insurance, public finance, and proposals for the remodeling and improving of the economic system.

Preparation: Ec 5

3 class hours

Ec 7 Money and Banking

This course, amplifying the more general treatment of money and credit in Ec 3 and Ec 4, considers the problems of monetary and banking control with particular emphasis upon the policies of the Federal Reserve System. Current developments are carefully considered.

Prerequisite: Ec 3, Ec 4

3 class hours

Ec 8 Business Cycles

After a study of the conditions which underlie cyclical fluctuations in prices, volume of trade, physical production, and employment,

a careful analysis is made of the more significant theories of the business cycle. The possibilities of controlling such fluctuations and of initiating recovery receive extended attention. Throughout the course emphasis is placed upon the current phase of the business cycle and its peculiar problems.

Preparation: Ec 5, Ec 6

3 class hours

Ec 11 Labor Problems

An intensive study of the labor problems of modern industry constitutes the content of this course. Unemployment and other grievances of the worker, including industrial accident and disease, inadequate wages, long hours, undesirable working conditions, child and woman labor, etc., are carefully analyzed. Labor unions, representing the workers' effort to solve the above problems, receive extended attention with an appraisal of their policies and accomplishments. Employee representation, profit-sharing plans and similar devices of the employer to meet the same problems are also examined critically. The attitude of our government toward these problems and its attempts to handle them are analyzed carefully. The suggestions of other groups and agencies in respect to these problems will be treated, e.g. co-operative movement, socialism.

Prerequisite: Ec 3, Ec 4

4 class hours

Ec 12 Economic Systems

After developing various criteria for evaluating the different economic systems, the course proceeds to a comparative analysis of capitalism, co-operation, socialism, communism, and fascism. The problems of economic planning receive particular attention.

Prerequisite: Ec 3, Ec 4

3 class hours

Ec 14 International Economic Relations

A careful examination of the important principles of international trade and finance precedes a critical survey of the international commercial policies of modern nations, with special reference to the United States. Such broader problems as the international control of raw materials, exchange restrictions, international cartels and the economic activities of the League of Nations and other international organizations are considered.

Preparation: Ec 5, Ec 6

4 class hours

Ec 15 History of Economic Thought

A critical review of the origin and development of economic thought. After a brief account of the contributions of Plato and

Aristotle, the early Christian fathers, and the writers of the Middle Ages, each of the main schools of economic thought is taken up in turn: the Mercantilists, the Physiocrats, the Classical School, the Socialists, the Historical School, the Austrian School, and the Neo-Classical School.

Preparation: Ec 5, Ec 6

3 class hours

Ec 16 Advanced Economic Theory

The course introduces the student to the more complex aspects of economic theory. Particular consideration is given to the major modern theoretical problems.

Preparation: Ec 15

3 class hours

Ec 17 Statistics

This course is intended to give the student an understanding of statistical principles and methods and their practical application in the social sciences. A study is made of the nature, sources, collection, and organization of statistical facts; the presentation of such facts in tabular or graphic form, the various averages, measures of dispersion, and the construction and use of index numbers.

3 class hours

Ec 18 Statistics

The major portion of this continuation of Ec 17 concerns the analysis of time series, and includes the methods of obtaining trends, seasonal indexes, and the measurement of cyclical variation. The application of correlation analysis in the field of social science is given extended attention.

Preparation: Ec 17

3 class hours

Ec 61 Seminar

Assigned readings and written reports on selected topics. May be elected with the consent of the department by qualified seniors majoring in Economics.

Ec 62 Seminar

A continuation of Ec 61.

Preparation: Ec 61

Ec 65 Thesis

See statement on Theses, page 136.

Ec 66 Thesis

A continuation of Ec 65.

The following courses offered in the College of Business Administration may be counted as courses in Economics:

AC 1 Accounting I

This course presents the fundamental principles of accounting theory and practice. Beginning with a consideration of the need for and the purpose served by accounting, a study of the balance sheet and operating statement is presented so that the ultimate purpose of accounting is understood before the mechanical methods of recording business transactions are presented. The course then takes up specific balance sheet accounts, the law of debit and credit, the theory of nominal accounts, construction and interpretation of accounts, the recording process, the trial balance, construction of financial statements, the need for adjustments at the end of the period, depreciation, deferred and accrued items.

3 class hours, 2 lab. hours

AC 2 Accounting I

This course continues the work of the first semester with increased emphasis placed on accounting and interpretation of accounts. The main topics covered are closing of books, starting the new period, comparative statements, control accounts, and the operation of petty cash systems.

Preparation: AC 1

3 class hours, 2 lab. hours

FI 4 Business Finance

The fundamental principles of finance are approached in this course from the point of view of the business man. A study is made of the two basic ways of financing, namely, equity and borrowed funds, and their use in original and expansion financing. In addition, consideration is given to working capital requirements and the distinctions between short-term and long-term financing. The latter part of the course deals with the application of the principles of finance to such problems as surplus, dividend and reserve policies, the relation of the corporation to banks and the investing public, and the problems of both trade and economic risk.

4 class hours

FI 5 Corporation Finance

This course builds on the foundation of FI 3 and FI 4. The corporation, rather than business in general, is here considered. An analysis is made of the changing concepts in the corporation, such as separation of ownership and management, and the roles played by private initiative and private property. Through use of actual examples, a study is made of financial policies affecting sales, prices, markets, and control.

Preparation: FI 4

3 class hours

FI 12 Public Finance

This course is concerned with the basic principles of governmental finance. After a study of the different kinds of taxes imposed by municipal, state, and federal governing bodies, attention is given to the "trend" in taxation, and the effects of governmental borrowing and tax policies. A large part of the course is devoted to an analysis of the sources of revenue such as commodity, highway, general property, poll, income, and death taxes.

Preparation: Ec 6

3 class hours

IA 3 Personnel Administration

A consideration of what modern industry is doing in making an application of science to the obtaining and retaining of an effective and co-operative working force. The student studies thoroughly personnel administration systems now in use, including the preparation and use of many forms among which are the occupational description, application, and interview blanks, promotion charts, wage scale, personnel control charts, etc. In addition, such subjects as wage payment plans, profit sharing, the training of workmen, workers' security plans, employee representation, collective bargaining, and management relationships are given attention.

Provisions of the National Labor Relations Act and the Wages and Hours Act are discussed.

4 class hours

IA 4 Personnel Problems

This course brings to the attention of the student an understanding of the related, yet varied, problems with which the modern personnel department is confronted. These include problems of guidance, placement, job evaluation, adjustment of rates, employee rating systems, development of complete, yet simple, personnel records, etc.

4 class hours

MA 1 Marketing Principles

This course is designed to acquaint the student with the principles underlying the distribution of merchandise. The first part of the course is concerned with the basic structure of markets; the main functions of marketing such as assembling, grading, storing, buying, selling and financing of goods; and the general classification of commodities into major types for the purpose of analytical study. Attention is then turned to a detailed consideration of the activities of the several types of middlemen, the work of the commodity exchanges and co-operative marketing associations, and the development of chain stores, mail order houses, and department stores. Other topics considered are market risk, pricing, selling terms and discounts, hedging, advertising, and the legal aspects of price maintenance.

4 class hours

MA 2 Marketing Problems

Using actual case material, this course analyzes and suggests solutions to a wide variety of selling problems in typical industries and trades. It is aimed throughout to develop the analytical powers of the student so that he may decide a problem from the viewpoint of a marketing executive. Consideration is given to consumers' buying habits and buying motives, to the important types of retail and wholesale enterprise, and to an analysis of the channels of distribution, with the object of formulating a basis for selecting suitable channels for various products. The marketing of industrial goods is studied, including certain special problems such as hedging. Producer's co-operative marketing is also given attention.

4 class hours

Education

NOTE: In addition to the courses listed, Ps 5 Educational Psychology may also be counted as a course in Education.

Ed 1 History of Education

Education is considered as the means by which nations have attempted to realize their social and spiritual ideals. This course traces the history of education from ancient times through the Greek and Roman periods, the Middle Ages, the Renaissance and Reformation, down to John Locke and the Enlightenment. The course is concerned with the development of points of view as well as with the details of organization and practice.

3 class hours

Ed 2 History of Education

Beginning with the emotional reaction against formalism in life as exemplified by Rousseau, this course takes up the immediate background of modern education and traces the development of national systems. The influence of such men as Pestalozzi, Herbart, Froebel, Spencer, Mann, Barnard, Dewey, and others is studied in detail. The course closes with a consideration of present tendencies in education.

3 class hours

Ed 3 Educational Measurements

The course concerns itself with current problems in the field of educational tests and measurements. Most of the lectures are given over to a discussion of the construction and use of new type objective tests, with particular reference to the field of secondary education. The relative merits of the essay and the objective examination are considered in connection with the problem of grades and grading systems. Enough elementary statistics are included to enable students to use intelligently the results of testing. Emphasis is placed upon the importance of an accurate interpretation of test data and upon the futility of indiscriminate testing.

3 class hours

Ed 4 Educational Organization and Administration

A study of the principles underlying the organization, administration, and supervision of secondary schools in the U. S. A. The course is illustrated with suitable problems taken from actual practice. It should be of special interest to students who contemplate teaching as a vocation.

3 class hours

Ed 7 Comparative Education

A discussion of the educational background and current theories and practices of England, France, and Germany. Emphasis is laid upon the bearing of European education on American practice. Much of the assigned reading is in current periodical literature, although a basic text is also used. Lectures, special reports, and class discussions comprise the media by which the course is conducted.

3 class hours

Ed 9 Educational Sociology

The course considers the relationship between education and sociology. Educational objectives are set up from the findings of sociological research and the traditional curriculum is examined

in the light of these objectives with a view towards its reconstruction. A critical attitude is maintained toward philosophical implications which will inevitably arise in the course.

3 class hours

Ed 10 Educational Philosophy

A study of the relationship between the science of education and the philosophy of education is followed by a consideration of philosophies of education in the light of basic theses of the history of philosophy. Such topics as evolutionism, behaviorism, pragmatism, instrumentalism, and progressive education are viewed in the perspective of the history of philosophy.

3 class hours

Ed 11 Principles of Secondary Education

A critical study of the aims, objectives and functions of secondary schools. Relations of the junior high school, the senior high school, and the junior college to American life are discussed.

4 class hours

Ed 12 Methods of Teaching in Secondary Schools

A fundamental course in methods of teaching. Such topics as motivation, socialization, drill, specific techniques, attention and fatigue, use of books and laboratories are discussed.

4 class hours

English

E 1-A English I

The aim of this course is to help the student attain competence in the understanding and evaluating of modern literature and in written expression. It includes a review of the structural essentials of the English language, various written assignments, and the study of essays and informational articles.

3 class hours

E 2-A English I

Continuing the general purposes of E 1-A, this course proceeds to a study of the special problems of exposition and description, and to a critical reading of poems, short stories, and plays.

3 class hours

E 5 Advanced Composition

The technique of writing in the shorter literary form will be studied in detail and applied systematically toward the building up of the student's individual style. A part of the time each week will be devoted to personal conference between the student and the instructor.

Prerequisite: E 1-A, E 2-A

3 class hours

E 6 Advanced Composition

A continuation of E 5.

Preparation: E 5

3 class hours

E 7 Creative Writing

For students interested in imaginative writing. Original papers by the students will be discussed in class and in weekly conference with the instructor. The principles underlying creative writing will be carefully studied.

Preparation: E 6

3 class hours

E 8 Creative Writing

Continued practice in creative writing supplemented by an analysis of the work appearing in the better magazines. The shorter forms will be emphasized.

Preparation: E 7

3 class hours

E 9 Journalism I

The newspaper technique, with practice in re-writing. The general tasks of an "inside" man and the functions of the editorial department.

4 class hours

E 10 Journalism I

The problems of reporting and newswriting, with written assignments in all types of spot news reporting.

Preparation: E 9

4 class hours

E 11 Journalism II

Editing the news. The writing of editorials, feature articles, and columns.

Preparation: E 10

4 class hours

E 12 Journalism II

A general practice course in newspaper writing, the covering of special assignments, and editorial problems.

Preparation: E 11

4 class hours

E 13 Effective Speaking

This course offers practical training in the preparation and presentation of the various types of speeches. The instruction is planned to eliminate defects of voice, posture, and delivery, and to develop in the student an ability to speak easily, naturally, and forcefully.

2 class hours

E 14 Effective Speaking

Continued practice in impromptu and extempore speaking, organization of material, consideration of the audience, and vocabulary building form the basis of the course.

Preparation: E 13

3 class hours

E 15 Survey of English Literature

A survey of English literature to 1800. After a brief study of the social and political background of each literary period, the writing of the period is considered, and the more important writers are studied and read in detail. The purpose of the course is to give the student an appreciation of English literature as a whole, and an intimate knowledge of its major figures.

4 class hours

E 16 Survey of English Literature

A survey of English literature from 1800 to the present century. The outstanding writers are read, studied, and related to the general background of nineteenth century England. The purpose of the course is to give the student an understanding of the writers who contributed most to the formation and development of modern literature in England.

4 class hours

E 17 English Drama Before Shakespeare

A study of the origins and growth of English drama from its beginning to its culmination in the work of Shakespeare. A discussion of the morality plays will be followed by a careful consideration of the influence of Plautus, Terence, and Seneca on the dramatists of the age. Plays by Lyly, Peele, Greene, Kyd, and Marlowe will be read as a background for Shakespearean drama.

3 class hours

E 18 Chaucer

An introduction to the language and literature of Chaucer and his contemporaries, with special attention to *The Canterbury Tales*. The course includes a consideration of Chaucer's influence on the growth of the language, an examination of the "roman de tiroir" form, and a survey of the chief types of European popular narrative which *The Canterbury Tales* represents.

3 class hours

E 19 Shakespeare

The Elizabethan period, sixteenth century London, the Shakespearean stage and audience, and the actors' companies will be discussed. Shakespeare's life and his development as a dramatist will be carefully considered. Five plays will be intensively studied.

4 class hours

E 20 Shakespeare

Lectures will be given on Shakespeare's language, the text of the plays, Shakespearean criticism, editors' problems, etc. Four plays will be intensively studied. The sonnets will be read and discussed.

4 class hours

E 21 Nineteenth Century Poetry I

Background forces which shaped the Romantic period will be carefully studied; the influence of German idealists, of the French Revolution, and of the natural reaction from the classicism of Pope and Johnson will be analyzed and evaluated. Poetry of Wordsworth, Coleridge, Byron, Keats, and Shelley will be studied critically.

3 class hours

E 22 Nineteenth Century Poetry II

A study of the poetry of the Victorian era with emphasis on the writings of Browning and Tennyson. The influence of the age on its poets will be carefully considered.

3 class hours

E 23 Seventeenth and Eighteenth Century Prose

A study of the important, non-fiction prose works of Bacon, Browne, Swift, Addison, Steele, Johnson, and Boswell, among others, with emphasis on the relationship of the literature to the age. The various prose styles will be discussed. A written paper will be required.

3 class hours

E 24 *Nineteenth Century Prose*

An examination of significant nineteenth century writers as to their social, political, literary, and educational ideas. Lamb, Hazlitt, Carlyle, Macaulay, Newman, Ruskin, Arnold, Huxley, and Stevenson are among those to be considered. A written paper will be required.

3 class hours

E 25 *American Literature to 1860*

A survey of American literature from colonial times to the triumph of the transcendental movement in New England. The work of Bryant, Irving, Cooper, Poe, Emerson, Thoreau, Lowell, Holmes, Longfellow, and Melville will be emphasized.

3 class hours

E 26 *American Literature After 1860*

Continuing E 25, the course will consider the rise of realism after the Civil War, the development of American humor, the appearance of local color writers, and modern trends since 1900.

3 class hours

E 27 *History of the English Novel*

This survey will trace the development of the novel from the 18th century to the beginning of the Victorian era. It will deal with the maturing of the novel form in the hands of Defoe, Richardson, Fielding, and Smollett; the "Gothic Romances" of Walpole and Lewis; and the novel of manners as seen in Jane Austen.

3 class hours

E 28 *History of the English Novel*

This course will deal with the work of the Great Victorians, particularly Thackeray, Dickens, Eliot, Conrad, and Hardy. A few contemporary novels will be discussed. The student will be expected to read widely in the field.

3 class hours

E 29 *Great European Writers*

An introduction to the classics of Ancient and Medieval literature. The purpose of the course is to acquaint the student broadly with our literary heritage and to furnish him background for later studies in literature.

3 class hours

E 30 Great European Writers

A survey of the literature of Europe from the Renaissance to the beginning of the twentieth century.

3 class hours

E 31 Comparative Drama

Through the analysis of plays of various origins, this course shows the development of essential techniques in drama from period to period, and demonstrates how a general type of drama manifests special characteristics in accordance with the social and political backgrounds against which it is set. During this term the emphasis is placed on the classic literature of the Greek and Roman theater.

3 class hours

E 32 Comparative Drama

This course, a continuation of the study begun in E 31, deals with the representative plays of the Continent since 1600.

3 class hours

E 33 Modern Literature 1895-1915

Beginning with a study of late nineteenth century literature in England and America, the course considers the principal literary developments of the period 1895 to 1915. New forms and methods in poetry, the novel, the short story, and the play are studied and are illustrated by the work of literary groups and movements and by such major writers as Walt Whitman and Henry James.

3 class hours

E 34 Modern Literature Since 1915

A survey of contemporary literature in England and America. Outstanding writers are studied in detail. Some of the subjects discussed are recent changes in form and technique; literary experiments; the effect on literature of the World War, and of recent social changes. During the course each student writes a paper and presents a class report on a contemporary author.

3 class hours

E 35 The Essay in England and America

Between fifty and sixty essays are studied in detail, the time ranging from the end of the 16th century to the present. The developing form of the essay as a type is considered throughout the course, and for each essay the author's judgments, style, and literary habits are studied, with some attention to the principal events of the author's life.

Lecture and class discussion are both employed.

3 class hours

E 36 Introduction to Criticism

This course is based on a careful reading and discussion of some thirty-five pieces of critical writing, ranging from Plato to Conrad. Various critical doctrines are discussed, traced in their development from century to century, and experimentally applied to notable literary works old and new.

3 class hours

E 61 Seminar

Independent investigation of a selected topic together with intermediate research reports. May be elected with the consent of the department by qualified seniors majoring in English.

E 62 Seminar

A continuation of E 61. A final report is required which summarizes the research of the year.

Preparation: E 61

Geology

Gy 1 General Geology

A study of earth movements and various terrestrial applications of solar energy. Lectures on fundamental general facts as to origin and movements of the earth, weathering, work of winds, underground and surface waters, glaciers and the glacial period, lakes and swamps, and vulcanism.

3 class hours

Gy 2 General Geology

Course Gy 1 is continued with such topics as mountain formation, oceans, oceanic life, atmosphere touching upon meteorology. A considerable portion of time is given to the study of igneous, sedimentary and metamorphic rocks, supplemented by laboratory and field work.

3 class hours

Gy 5 Historical Geology

A review of the beginning of the earth, its development and historical significance of rock characters. This is followed by a study of the pre-Cambrian Paleozoic and the early Paleozoic sub-era.

3 class hours

Gy 6 Historical Geology

Continuation of the first semester taking in the late Paleozoic sub-era, and the Mesozoic and Cenozoic periods, and continuing through the geologic history of man.

3 class hours

Government

Gv 1 *American Government and Politics*

The study of our National Government with respect to its organization and function; its powers and limitations under the Constitution; its legislative, administrative, and judicial machinery under the party system of government and bureaucracy.

3 class hours

Gv 2 *American Government and Politics*

A more detailed study of the relationships of our federal, state, and municipal governments, including an analysis and comparison of the various state governments and types of municipal government with respect to state and local agencies for carrying out the executive, legislative, and judicial functions of government in a democratic country.

3 class hours

Gv 3 *Comparative Government*

The older governments of Europe, those principally of Great Britain and France, but also of Switzerland and the Scandinavian countries, are described and analyzed in this course. Institutions are compared in these various states with reference to America and the newer governments of Europe.

3 class hours

Gv 4 *Comparative Government*

A study of the newer governments of Europe, as found in Germany, Italy, and the Soviet Union. Democracy and dictatorship are analyzed as different modes of life and rule. These states are compared to each other, to the older governments of Europe, and to the United States.

3 class hours

Gv 5 *American Constitutional Law*

After a careful study of the influences affecting the framing of the Constitution, attention is turned to the leading constitutional principles of the American government as developed through judicial interpretation.

3 class hours

Gv 6 *American Constitutional Law*

A continuation of Gv 5. Primary emphasis is placed upon the relation of constitutional law to present-day problems, with particular reference to such items as "due process of law" and "inter-state commerce."

Preparation: Gv 5

3 class hours

Gv 7 Origins of Political Theory

A survey of political philosophy from Plato and Aristotle to Bentham. The nature, origin, forms, and ends of the state and government are covered.

3 class hours

Gv 8 Modern Political Theory

A critical study is made of the major developments in political theory since Bentham, with special reference to the influence of these developments upon American politics and political institutions. Attention is paid to the modern conflict between the democratic and the totalitarian conceptions of the state.

3 class hours

The following courses offered in the College of Business Administration may be counted as courses in Government.

PA 2 Public Administration I

A study of career service of the local, state, and national government; the administrative positions in career service; the information needed by the government administrator in order to function effectively; and the means for acquiring public administration knowledge.

4 class hours

PA 5 Business and Government

The object of this course is to develop a thorough understanding of the relationships between government and business. The attitude of our government towards business since 1885 as evidenced by legislative, judicial, and executive action will be analyzed in detail. Careful attention will be given the experience under the NRA and the attempts on the part of government and business to preserve the good features of the codes. Special consideration will be given to the part played by the administrative agency.

4 class hours

PA 7 Public Administration II

A study of the subject matter and principles of management necessary for the efficient operation of the government.

4 class hours

PA 8 Public Administration III

This course presents a study of the public relations, fiscal control, and policy-making aspects of public administration, stressing the importance of co-operation among government bureaus, legis-

lative bodies, and the public; and presents to the student an appreciation of the importance of versatility of ability for a successful public career.

4 class hours

History

H 1 History of Civilization

This is primarily a background course. Introductory lectures deal with primitive society, the development of language and writing, and the early contributions of Egypt and Asia. More detail is given to the structure of Greek and Roman society, the rise of the Christian Church, the barbarian invasions of the Empire, the growth of Islam, and the life of the early Middle Ages.

4 class hours

H 2 History of Civilization

This course deals with the growth of the monarchies in Europe, the medieval Church, the art and literature of the Renaissance and Reformation, the economic revolution, the Age of Reason in France and England, the Old Regime and the Revolution in France, and the growth of science and industrialism.

4 class hours

H 5 Europe, 1789-1870

This course aims at describing and interpreting the development of European states from the French Revolution to 1870. Major topics include the Metternich system, the emergence of French Republicanism, and the unification of Italy and Germany. Non-political factors receive much attention throughout the course.

3 class hours

H 6 Europe Since 1870

The international relationships which precipitated the tragedy of 1914 are considered. The rise of militarism and nationalism, secret diplomacy, propaganda and the press, the "incidents" which led to the World War, the conduct of the war, the peace treaties, and the rise of socialism and fascism are discussed in this course.

3 class hours

H 7 England to 1688

This course surveys the political, social, religious, and economic development of England to the Revolution of 1688. Political history receives the major emphasis, but stress is placed upon the rise of the English institutions which represented England's outstanding contribution to civilization.

3 class hours

H 8 England Since 1688

A continuation of H 7. A study is made of Queen Anne's England, the policies of Walpole, England's part in European politics, the age of the first Reform Bill, English imperialism, and Victorian society.

3 class hours

H 9 The United States to 1865

This course is an interpretation of the events which shaped the American nation to the Civil War. Social customs, economic influences, racial contributions, and humanitarian movements are not neglected, though the political history is stressed.

3 class hours

H 10 The United States Since 1865

Major attention is given to the social, economic, and political foundations of recent history in this survey of the transition of America from an agricultural to an urban industrialized society since the Civil War. Consideration is given to the problems arising with the emergence of America as a world power.

3 class hours

H 11 Latin American History

This course deals with the European background of Spanish and Portuguese colonization in the New World, the exploits of the conquistadores, the Indian civilizations, colonial institutions, and the forces which gave rise to the revolutions in the early 19th century.

3 class hours

H 12 Latin American History

This course continues H 11, and describes the Wars of Independence and the rise of the republics. A study is made of the international relations of the Latin American countries, the Monroe Doctrine, and the Pan-American conferences.

3 class hours

H 13 English Constitutional History

This course is devoted to a consideration of the English constitution and of the common law; local government vs. central government; the origin and growth of Parliament; the development of the British cabinet system; and a comprehensive study of statutes and documents.

4 class hours

H 14 American Constitutional History

In this course a study is made of the historical development of the United States Constitution with particular emphasis on its progressive adaptation to a changing social and economic order.

4 class hours

H 15 Far Eastern International Relations, 1840-1900

Between 1840 and 1900 the United States and the European powers developed their several foreign policies towards China and Japan. Japan succeeded in developing a policy toward China and the West. The Chinese Empire failed to develop a consistent policy and was nearly dismembered. This course concerns the above developments.

3 class hours

H 16 Far Eastern International Relations Since 1900

Since 1900 Japan emerged as a world power and embarked upon a career of imperialism. China at last developed a foreign policy. With the close of the first World War, European imperialism waned. The United States tried to act as umpire. War resulted. This course concerns these developments.

3 class hours

Mathematics

M 1 College Algebra

The study of algebra is scheduled to begin with the solution of the quadratic equation, simultaneous quadratics, and equations in quadratic form. However, a rapid but thorough review of the fundamentals of algebra precedes this. The solution of the quadratic is followed by a detailed study of the theory of exponents. Then follow radicals, series, variation, inequalities, and the elementary principles of the theory of equations. Considerable time is given to plotting and the use of graphs in the solution of equations. The elementary theory of complex numbers is also covered.

3 class hours

M 3 Trigonometry

This is a complete course in trigonometry and should enable the student to use all branches of elementary trigonometry in the solution of triangles as well as in the more advanced courses where the knowledge of trigonometry is essential. Some of the topics covered are the trigonometric ratios; inverse functions; goniometry; logarithms; circular measure; laws of sines, cosines,

tangents, half angles; solution of oblique and right triangles; transformation and solution of trigonometric and logarithmic equations. Considerable practice in calculation of practical problems enables the student to apply his trigonometry to problems arising in practice at an early stage. Additional work, graphical and algebraic, is done with the complex number, introducing De-Moivre's theorem and the exponential form of the complex number.

2 class hours

M 4 *Analytic Geometry and Introduction to Calculus*

This being a basic course in preparation for any further study of mathematics, it requires a thorough knowledge of the fundamentals of algebra. The course covers cartesian and polar coordinates; graphs; the equations of simpler curves derived from their geometric properties; thorough study of straight lines, circles, and conic sections; intersections of curves; transformation of axes; plotting and solution of algebraic equations of higher order and of exponential, trigonometric, and logarithmic equations; loci problems. The general equation of the second degree is thoroughly analyzed in the study of conic sections. Some time is devoted to curve fitting from empirical data.

Explicit and implicit functions, dependent and independent variables, some theory of limits, continuity and discontinuity are given special attention from both the algebraic and the geometric points of view. Some theorems on the infinitesimal are introduced, and a study is made of infinity and zero as limits. Relative rates of change, both average and instantaneous, and the meaning of the slope of a curve follow. The differential and the derivative as applied to algebraic functions with the geometric interpretation are then studied. Tangents to curves of the second degree follow here. Simple applications with interesting practical problems help to develop the interest here and lay a solid foundation for the study of the calculus. The introduction of the differential at the same time with the derivative helps considerably to bridge the large gap which usually exists when the student passes from the study of the elementary analytic geometry to the infinitesimal of calculus.

Preparation: M 1, M 3

5 class hours

M 5 *Differential Calculus*

The differential is introduced at the outset of the course, together with the derivative; geometric and practical illustrations are given of both; and both are carried along throughout the course. The work consists of differentiation of algebraic, trigonometric exponential, and logarithmic functions, both explicit and implicit;

slopes of curves; maxima and minima with applied problems; partial differentiation; parametric equations; derivatives of higher order; curvature; evolutes and involutes; points of inflection; related rates; velocities, acceleration; indeterminate forms; expansion of functions; series. Although the subject matter deals with considerable theory, constant sight is kept of the practical application of the theory. The geometric interpretation of every new subject is carefully defined, and problems are continually solved dealing in practical applications of the theory in geometry, physics, and mechanics.

Prerequisite: M 1

Preparation: M 4

4 class hours

M 6 *Integral Calculus*

This course, a continuation of M 5, deals with integration as the inverse of differentiation as well as the limit of summation. The topics covered are methods of integration; use of integral tables; definite integrals; double and triple integrals; areas in rectangular and polar co-ordinates; center of gravity; moment of inertia; length of curves; volumes of solids; areas of surfaces of revolution; volumes by triple integration; practical problems in work, pressure, etc., depending on the differential and integral calculus for solution; solution of simpler differential equations.

Preparation: M 5

4 class hours

M 7 *Differential Equations I*

The elementary theory of differential equations and the method of solution of certain ordinary differential equations are offered here as a general course in mathematics. Although this is principally a problem course in solving differential equations, properties of the equations and of their solutions are deduced, and applications in the various fields of scientific work are analyzed.

Preparation: M 6

4 class hours

M 8 *Differential Equations II*

Special cases of first order equations are considered, and a fuller treatment of first order equations of higher degree leads to a consideration of envelopes, special loci, and particular curves. The general second order linear equation is studied, and the several well-known methods of attack are presented. Solution in series form of equations whose primitives are not made up of classified functions is studied. Elementary partial differential equations of the first and second orders, leading to a presentation of Fourier's series, conclude the course.

Preparation: M 7

4 class hours

M 9 *Higher Algebra*

Complex numbers and the elementary theory of vectors start this course. It continues with the solution of equations of the third and fourth degree, Horner and Sturm theorems, the solution of higher degree equations with the use of graphs. Some invariant forms are studied. Then follow general systems of equations with the complete study of determinants, and some of the elements of matrices. A study is made of the theory of elimination, linear dependence, and linear transformations. If time permits, a study is made of probability and related subjects.

Prerequisite: M 1, M 3

4 class hours

M 10 *Curve Analysis*

This course deals with the methods of approximation of roots; plotting; empirical equations; and alignment charts.

Prerequisite: M 5

4 class hours

M 11 *Solid Analytic Geometry*

The study of analytic geometry is extended here into three dimensions, mostly with rectangular co-ordinates, although cylindrical and spherical co-ordinates and the transformation between the three systems are also introduced. The equations of the first and second degree are analyzed. A study is made of line segments and angles; planes, linear equations in three variables; normal forms; systems of planes and angles; surfaces in general; quadric surfaces. Some work is done on general curves, certain special curves, surfaces of revolution, locus problems, and homogeneous co-ordinates.

Prerequisite: M 4

4 class hours

M 12 *Modern Geometry*

This course offers a brief outline of the history of geometry through the ages, especially the 19th century; analysis of geometry of the triangle and circle; systems of co-ordinates, linear dependence, transformations; principle of duality; poles and polars; harmonic division, cross ratios, and conical projection. Certain special theorems include those of Desargues, Pascal, and Brianchon.

Prerequisite: M 4

4 class hours

M 13 *Spherical Trigonometry*

This is a complete course in the study of spherical trigonometry, solving right and isosceles spherical triangles; Napier's rules; laws of sines, cosines, half-angles, and half-side formulas; Napier's analogies. A detailed solution of oblique spherical triangles

including areas follows. Considerable time is spent on the celestial sphere and the astronomical triangle and on navigation, calculation of latitude and longitude, bearing, and time.

Prerequisite: M 3

4 class hours

M 14 *History of Mathematics*

In this course a survey is made of the development of various branches of mathematics, and attention is given to the lives of men who have made outstanding contributions to mathematical science.

3 class hours

M 15 *Advanced Calculus*

No student should elect this course unless he is thoroughly familiar with the contents of courses M 5 and M 6. The subjects covered are continuity, indeterminate forms, applications of partial differentiation, vectors and differentiation of vectors, the complex variable, differentiation and functions of the complex variable, differentiation of integrals, envelopes.

Prerequisite: M 6

4 class hours

M 16 *Advanced Calculus*

This is a continuation of M 15. The course starts with work in differential equations and problems in damped vibration and the potential function. Other topics are the hyperbolic function; expansion in infinite series including Fourier series; integration of special forms with definite, multiple, and improper integrals; probability integral; Gamma function; Beta function; Bessel's function; line integrals and applications.

Preparation: M 15

4 class hours

M 17 *Series*

Various types of series and their uses. Study of limits, infinite series, tests for various types of convergence; divergence; algebraic operations with series; integration and differentiation; applications and use of special series.

Prerequisite: M 5, M 6

4 class hours

M 18 *Theory of Equations*

This course is devoted more to the theory and analysis of equations and roots than to actual solutions. The properties of polynomials and continuity are studied. The complex number, algebraic and geometric form, is reviewed. The solutions of

quadratic, cubic, and quartic equations are discussed and analyzed with various theorems on roots. Proof is given of the fundamental theorems; other theorems discussed are the remainder theorem, Horner's and Newton's methods, limits of roots, Rolle's theorem, Descarte's rule, Sturm's theorem, Budan's theorem, and De-Moivre's theorem. Transformations are studied and an analysis is made of rational, irrational, complex, and multiple roots. Symmetric functions including the relation of roots and coefficients are also taken up. Some work is done with discriminants. The course closes with the theory of least squares and curve fitting.

Preparation: M 5, M 6

4 class hours

Modern Languages

French

F 1 Elementary French

A beginner's course stressing the essentials of grammar, practice in pronunciation, and progressive acquisition of basic vocabulary and current idiomatic expressions.

4 class hours (upperclass)

F 2 Elementary French

A continuation of F 1. Most of the time is devoted to the reading of simple texts with oral practice based on the material read.

Preparation: F 1

4 class hours (upperclass)

F 3 Intermediate French

In this course several texts of average difficulty are read and studied. The work includes a thorough review of grammar, oral practice based on the reading matter, memorizing of selected passages, dictation, study of idioms, vocabulary building, and outside reading.

Preparation: F 2

4 class hours (upperclass)

F 4 Intermediate French

A continuation of F 3, with an increasing amount of both class and outside reading.

Preparation: F 3

4 class hours (upperclass)

F 5 Modern French Literature

A study of the chief trends in French literature since 1850. Significant works of representatives of the various literary movements are read and analyzed. The course is concerned mainly with the short story and the novel. Collateral reading and reports.

Preparation: F 4

4 class hours

F 6 *Modern French Literature*

A continuation of F 5. The major part of the course is devoted to the study of the drama, with the remainder given to French verse of the period. Collateral reading and reports.

Preparation: F 4

4 class hours

F 7 *French Classicism*

This course is designed to furnish a comprehensive survey of the background and development of French literature of the 17th century and to aid the student in a critical interpretation of the most significant works of the period. The reading is mainly from the dramatic works of Corneille, Racine, and Moliere. Collateral reading and reports.

Preparation: F 4

4 class hours

F 8 *French Classicism*

A continuation of F 7. The works of La Fontaine, Descartes, and Pascal receive the major attention.

Preparation: F 4

4 class hours

F 9 *French Romanticism*

A study of the origins and development of the Romantic movement in French literature. The readings include significant selections from the novels of the principal writers of the Romantic school, as well as some of the more important Romantic dramas.

Preparation: F 4

4 class hours

F 10 *French Romanticism*

Continuing F 9, the course pursues further the study of the Romantic drama. The latter part of the term is devoted to the reading of selections of poetry from the works of Lamartine, Hugo, Musset, and others.

Preparation: F 4

4 class hours

German

G 1 *Elementary German*

A beginner's course stressing the essentials of grammar, practice in pronunciation, and progressive acquisition of basic vocabulary and current idiomatic expressions.

4 class hours (upperclass)

G 2 *Elementary German*

A continuation of G 1. Most of the time is devoted to the reading of simple texts, with oral practice based on the material read.

Preparation: G 1

4 class hours (upperclass)

G 3 *Intermediate German*

In this course several texts of average difficulty are read and studied. The work includes a thorough review of grammar, oral practice based on the reading matter, memorizing of selected passages, dictation, study of idioms, vocabulary building, and outside reading.

Preparation: G 2

4 class hours

G 4 *Intermediate German*

A continuation of G 3, with an increasing amount of both class and outside reading. Scientific German is stressed for Science majors.

Preparation: G 3

4 class hours

G 5 *Modern German Literature*

A survey of the main currents of German literature since 1880. Representative works of the leading authors of the period are read and interpreted. The course deals chiefly with the short story and the novel. Collateral reading and reports.

Preparation: G 4

4 class hours

G 6 *Modern German Literature*

A continuation of G 5. The drama and poetry receive the main emphasis. Collateral reading and reports.

Preparation: G 4

4 class hours

G 7 *The Classical Period of German Literature*

This course aims to trace the development of German literature during the second half of the 18th century, beginning with the Storm and Stress period. The works of Lessing, Goethe, and Schiller will receive the major emphasis.

Preparation: G 4

3 class hours

G 8 *The Classical Period of German Literature*

A continuation of G 7. The readings will consist mainly of the later works of Goethe and Schiller.

Preparation: G 4

3 class hours

G 9 *German Literature of the Nineteenth Century*

This course will consider the chief tendencies in German literature from the beginning of Romanticism to the coming of Naturalism. Representative works of the principal writers of the period will be read and analyzed.

Preparation: G 4

3 class hours

G 10 *German Literature of the Nineteenth Century*

A continuation of G 9. Among the works to be read will be some of the outstanding dramas of the latter half of the century.

Preparation: G 4

3 class hours

Spanish

Sp 1 Elementary Spanish

A beginner's course stressing the essentials of grammar, practice in pronunciation, and progressive acquisition of basic vocabulary and current idiomatic expressions.

4 class hours (upperclass)

Sp 2 Elementary Spanish

A continuation of Sp 1. Most of the time is devoted to the reading of simple texts with oral practice based on the material read.

Preparation: Sp 1

4 class hours (upperclass)

Sp 3 Intermediate Spanish

In this course several texts of average difficulty are read and studied. The work includes a thorough review of grammar, oral practice based on the reading matter, memorizing of selected passages, dictation, study of idioms, vocabulary building, and outside reading.

Preparation: Sp 2

4 class hours

Sp 4 Intermediate Spanish

A continuation of Sp 3, with an increasing amount of both class and outside reading.

Preparation: Sp 3

4 class hours

Sp 5 Spanish Literature of the Golden Age

This course deals with the Spanish prose of the sixteenth and seventeenth centuries, particularly the *Don Quixote* and the *Novelas Ejemplares*. Lectures, translation, and collateral reading.

Preparation: Sp 4

4 class hours

Sp 6 Spanish Literature of the Golden Age

A continuation of Sp 5, with emphasis on the drama of Lope de Vega, Tirso de Molina, and Calderon. Lectures, translation, and collateral reading.

Preparation: Sp 4

4 class hours

Sp 7 Modern Spanish Literature

This course aims to acquaint the student with the literature of Spain during the last quarter of the eighteenth century and the first half of the nineteenth. The chief emphasis is placed on the romantic poetry and drama. Lectures, translation, and collateral reading.

Preparation: Sp 4

4 class hours

Sp 8 Modern Spanish Literature

A continuation of Sp 7, this course is devoted to Spanish literature of the second half of the nineteenth century, with emphasis on the realistic novel. Lectures, translation, and collateral reading.

Preparation: Sp 4

4 class hours

Sp 9 Modern Spanish American Literature

The purpose of this course is to acquaint the student with the general trends of Spanish American literature. Plays, essays, and novels that reflect the economic and social problems of our neighbors to the south will receive the chief attention. Lectures, translation, and collateral reading.

Preparation: Sp 4

4 class hours

Sp 10 Modern Spanish American Literature

A continuation of Sp 9, this course is devoted to the literature of Mexico and Central America, and particularly the works of Ruben Dario.

Preparation: Sp 4

4 class hours

Orientation

This course, required of all first year students, is designed to make entering students explicitly aware of those facts, principles, and techniques which are significantly related to the maintenance of their intellectual efficiency, to assist them in making desirable social adjustments in the college community, to help them make a wise choice in their upperclass fields of specialization. Special effort is made to prepare the student to make an early and satisfactory adjustment to the conditions of the co-operative work. Lectures and individual conferences.

1 class hour

Philosophy

Ph 1 Introduction to Philosophy

This introductory course combines the historical and systematic approaches to the subject. The historical treatment includes a survey of the chief philosophers and the development of basic philosophical ideas. The systematic treatment presents the several types of philosophy, such as realism, materialism, idealism, and pluralism. The place of philosophy is considered in its relation to ethics, religion, and natural sciences. The course both acquaints the student with facts about philosophy and trains him to think philosophically.

3 class hours

Ph 2 Problems of Philosophy

The chief systems of thought are applied to what may be termed the persistent problems of philosophy. The problems are to be found in the fields of epistemology, teleology, and metaphysics. The following topics suggest representative problems which will be studied: the relation between mind and body, the nature and extent of freedom of the will, the validity of knowledge, and the bearing which the more recent views in physics and psychology have upon related philosophical problems.

Preparation: Ph 1

3 class hours

Ph 3 History of Philosophy

Beginning with the early Greek age period, the course traces the development of philosophical thought through the patristic and scholastic periods. A study is made of the transition from medieval to modern philosophy.

3 class hours

Ph 4 History of Philosophy

The first half of the course is a study of the period from Bacon to Kant; the second half begins with the time of Kant and ends with a consideration of present-day philosophers and their systems of thought.

3 class hours

Ph 5 Philosophy of Religion

Fundamental questions of religious belief are examined in the light of philosophy. Modern religions are compared with respect to their views on the nature of the Deity, the meaning of life, and the relationship between man and God. Further topics for study

include the question of the validity of mysticism and intuitive knowledge of religious truth, the immortality of the soul, the meaning of the supernatural, the presence of natural evil, and the relation of morality to religion.

Students may take Philosophy of Religion without having had any other course in this department, although there is an advantage in having had the Introduction to Philosophy.

3 class hours

Ph 6 Logic

Formal logic is subordinated in this course to the more practical consideration of the methods of critical and reflective thought. Common fallacies in logic are indicated, and the student is given frequent exercises in correct reasoning. Attention is given to the principles of induction, deduction, verification, syllogism, and assumption. To assist the student to think clearly and correctly is the essential purpose of this modified course in logic.

3 class hours

Physical Education

Physical Training

All first year students are required to take Physical Training. Health, strength, and vitality do not come by chance but by constant attention to those factors involved in their development. It is very essential for the student to acquire good habits of living.

The work in the course includes a formal calisthenic program, special exercise classes for the correction of postural defects, participation in the regular athletic program, including baseball, basketball, football, hockey, track, and many types of informal games. All members of the class are also required to learn to swim.

Students wishing to be excused from Physical Training because of physical defects are required to present a petition to the faculty supported by a physician's certificate.

2 class hours

PE 1 Hygiene

One class hour a week is devoted to the study of information closely related to the physical training work and to personal and mental hygiene. For this class lecture, each student is assigned at least one hour of outside study based on the required textbook. The course includes enough of the fundamentals of physiology and anatomy to enable the student to understand such parts of the course as require some knowledge of these subjects.

1 class hour

PE 5 Principles of Physical Education

The course considers the place of physical education in the educational program in the United States. The development of physical education programs based on the changes in society from primitive to modern times is discussed, careful attention being given to the needs of the individual, as well as to the needs of the group. Relationship between medical service and the physical education department is considered, and methods of co-ordination between these two important departments are investigated. The history of physical education, in so far as it affects the modern program, is included in the course. Factors such as economic, social and political influences which have an important effect on the conduct of the program are also considered. School health programs are discussed, with particular emphasis upon the medical and physical examinations and tests and the procedures which follow. Diagnostic and remedial techniques, classroom hygiene, and principles of preventive and corrective exercise are discussed. The course also includes a consideration of the proper place occupied by interschool and intercollegiate athletics in the physical education program.

Required of all students electing Physical Education as a minor field.

3 class hours

PE 6 Play and Recreation

The purpose of this course is to prepare students for leadership of leisure-time activities. It considers the biological and sociological aspects of play and its increasing importance in modern life. From a practical point of view the course deals with the problems faced by the director of leisure-time activities in the community, in the school, or on the playground. The course should be of special interest to students who contemplate entering social work or teaching.

3 class hours

PE 7 History of Physical Education

To provide a valuable background for students in this field, this course traces the whole history of physical education from the days of the Greeks and the Romans up to the present. Attention is given to a number of special systems of training which have been developed in Europe.

The course is required of all students electing Physical Education as a minor field.

3 class hours

PE 8 Administration of Physical Education

This course is designed to acquaint students in the field of physical education with many of the administrative problems which are likely to arise in connection with their work. The subject matter includes a consideration of the objectives of the physical education program, personnel required, and various allied subjects such as gymnasia, athletic fields, and the construction and maintenance of these units. The conduct of the athletic program including requirements for equipment, arrangements of schedules, coaching, meets, etc., is also included.

Required of all students electing Physical Education as a minor field.

3 class hours

PE 9 Football

This course is designed to furnish the student interested in football coaching with a thorough knowledge of the sport. Careful consideration is given to the fundamentals in discussing the plays of each position in the line and backfield. Various well-known offensive and defensive systems are discussed for the purpose of considering their general merits, as well as adaptations to particular situations. Training and conditioning, rules and interpretation, and officiating are given proper attention.

3 class hours

PE 11 Track and Field Events

The course considers the care and training of track athletes. Practice schedules, selection of material, conduct of meets, etc., are discussed. The viewpoint from which the topics are treated is that of the student of coaching technique. In connection with this course, action pictures taken from actual performances by world champions, together with moving pictures, are of great value in demonstrating the style and technique of track and field events.

3 class hours

PE 12 Basketball and Baseball

Various systems in use throughout the country are compared and contrasted. Team play, offense, defense, signal systems, training and conditioning, rules, and officiating are among the topics studied. The student in this course should acquire a thorough knowledge of all phases of the sports.

3 class hours

Physics

P 1-A Survey of Physical Science

The purpose of the course is to give a definite conception of the physical world to those students who ordinarily would not elect a science course but who need to know something about the contributions and the place of the physical sciences in contemporary civilization. This course begins with a study of the universe and solar system. Consideration is given to the principles of distance, mass and weight, and the simple dynamics of bodies. The earth is studied from the viewpoint of its geological, meteorological, and chemical aspects, these main fields introducing a non-mathematical discussion of magnetism, heat, and electricity.

4 class hours

P 2-A Survey of Physical Science

In this course, which continues P 1-A, the phenomena of light are taken up. Following this, consideration is given to spectroscopy and matter structure, the periodic table, acids, bases, salts, and organic compounds. The course concludes with a discussion of certain aspects of physics which are of practical importance in the household, such as heating, lighting, refrigeration, and electrical appliances.

4 class hours

P 1 Physics I

A course in the study of the fundamental principles of the mechanics of physics. Some of the topics covered are simple harmonic motion, uniformly accelerated motion, friction, work, energy, power, fluid pressure, angular velocity, centripetal force, equilibrium under the action of a series of parallel forces, and equilibrium under the action of concurrent forces.

3 class hours

P 2 Physics I

This is a thorough course in magnetism and electricity, covering all the details within the scope of standard college texts on these subjects. All lectures are illustrated by means of lantern slides, motion pictures, and special apparatus.

3 class hours

P 3 Physics II

A course in the study of wave motion, sound, and light. Molecular mechanics and other fundamental principles of physics are stressed at the beginning.

Preparation: P 1, P 2

3 class hours

P 3-A General Physics

A study of the fundamental principles of mechanics, heat, wave motion and sound. The course includes lectures with appropriate demonstrations and selected experiments performed by the student in the laboratory.

4 class hours, 4 lab. hours

P 4 Physics II

The topics studied are thermometry, expansion of solids, liquids and gases, calorimetry, change of state including latent heat of fusion and vaporization (sublimation), triple point diagram, conduction and radiation, and the mechanical equivalent of heat.

Preparation: P 1, P 2

3 class hours

P 4-A General Physics

This course is a continuation of P 3-A, and deals with the fundamental principles of light, electricity and magnetism. Appropriate demonstrations and laboratory experiments accompany all lectures.

4 class hours, 4 lab. hours

P 5. Physics Laboratory

This course consists of experiments in mechanics, light, electricity, and magnetism performed by each student, supplementing the lecture and classroom work of courses P 1, P 2, and P 3. The experiments on mechanics include the use of the vernier, micrometers, and spherometer; the calculation of true weights; the funicular polygon; gyroscopic motion; simple harmonic motion; and the determination of areas by means of the planimeter. Other experiments in this course include plotting the magnetic field about a bar magnet and the determination of the pole strength and field strength of the magnet, the position of images in a combination of lenses, and one experiment on electrostatics.

Preparation: P 1, P 2

2 lab. hours

P 6 Physics Laboratory

A continuation of the experiments started in P 5, including experiments on sound and heat. Some of the experiments of this course concern the modulus of elasticity, the determination of the velocity of sound, the coefficient of cubical expansion of mercury, the air thermometer, the determination of the mechanical equivalent of heat, the study of the maximum and minimum thermometers, and the use of the spectroscope in the study of the bright line and solar spectra. The experiments of this course supplement the class work of courses P 1, P 2, P 3, and P 4.

Preparation: P 1, P 2

2 lab. hours

P 9 Optics

This is a course in the more advanced forms of geometrical optics and the study of physical optics.

Preparation: P 3, M 6

3 class hours, 2 lab. hours

P 10 Optics

Continuing P 9, a detailed study is made of physical optics with considerable time spent on modern spectroscopic theory.

Preparation: P 9

3 class hours, 2 lab. hours

P 13 Acoustics

A complete mathematical study of the modes of vibration of strings, pipes, membranes, and a consideration of vibrating systems in general.

Preparation: P 3, M 6

3 class hours, 2 lab. hours

P 14 Acoustics

A course in the application of the principles of P 13 to the problems of speech, audition, sound, filters, musical instruments, and the acoustics of auditoriums.

Preparation: P 13

3 class hours, 2 lab. hours

P 15 Modern Physics

Consideration is given to molecular relations, and then to atomic structure, quantum mechanics, and allied subjects.

Preparation: P 4, M 7

3 class hours, 2 lab. hours

P 16 Modern Physics

Radioactivity, artificial transmutation, nuclear structure, and the devices for studying these phenomena are here presented. Some time is also given to the Stark, Zeeman, and Raman effects, and to X radiation and cosmic rays.

Preparation: P 15

3 class hours, 2 lab. hours

P 17 Electronics

This course is designed to make the student familiar with the principles, operation and application of electronic devices. Direct current circuits, alternating current circuits, measuring devices, thermionic tubes, and electronic principles are studied.

Prerequisite: P 1, P 2, P 3, P 4, P 5, P 6

3 class hours, 2 lab. hours

P 18 *Electronics*

Continuing the work of the first term, audio amplifiers and oscillators, high frequency amplifiers and oscillators, frequency measurements, photo cells, detectors, radio, and some special applications are studied.

Preparation: P 17

3 class hours, 2 lab. hours

P 65 *Thesis*

See statement on Theses, page 136.

P 66 *Thesis*

A continuation of P 65.

P 101 *Theoretical Physics*

Vector analysis, dynamics, hydrodynamics, thermodynamics, statistical mechanics.

(For graduate students only.)

3 class hours

P 102 *Theoretical Physics*

Kinetic theory of gases, electrical theory, magnetic theory, optics, spectra.

(For graduate students only.)

3 class hours

P 103 *Quantum Mechanics*

Quantum phenomena, Schrodinger equation, potential barriers, classical atomic dynamics, linear harmonic oscillator, rigid rotator.

(For graduate students only.)

3 class hours

P 104 *Quantum Mechanics*

The hydrogen atom, Van der Waal's forces, perturbation theory, the helium atom, the hydrogen molecule, valence bonds, radiation.

(For graduate students only.)

3 class hours

P 105 *Applied Mathematics*

Elliptical integrals, matrices, algebraic and trigonometric series, line and surface integrals, some differential equations of physics.

(For graduate students only.)

3 class hours

P 106 *Applied Mathematics*

Applications of vectors to physics, probability, empirical formulas, curve fitting, conformal transformations of fields and charts.

(For graduate students only.)

3 class hours

P 107 *Graduate Thesis*

Thesis work for graduate students.

P 108 *Graduate Thesis*

Thesis work for graduate students.

P 109 *Graduate Thesis*

Thesis work for graduate students.

P 110 *Graduate Thesis*

Thesis work for graduate students.

The following courses offered in the College of Engineering may be counted as courses in Physics:

ME 20 *Applied Mechanics (Statics)*

The subjects treated are collinear, parallel, concurrent, and non-concurrent force systems in a plane and in space; the determination of the resultant of such systems by both algebraic and graphical means, special emphasis being placed on the funicular polygon method for coplanar force systems; the forces required to produce equilibrium in such systems; first moments; and problems involving static friction, such as the inclined plane and the wedge.

Prerequisite: P 1

4 class hours

ME 21 *Applied Mechanics (Kinetics)*

The subjects treated are continuation of first moments as applied to varying intensity of force and to the determination of centers of gravity of areas and solids; second moments and the application to the determination of moment of inertia of plane and solid figures, radius of gyration, polar moment of inertia, product of inertia, principal axes; uniform motion, uniformly accelerated motion, variable accelerated motion, harmonic motion; simple pendulum, rotation, work, energy, momentum, and impact.

Preparation: ME 20

4 class hours

ME 30 *Thermodynamics*

In this introductory course in the fundamentals of thermodynamics the following subjects are discussed: general theory of heat and matter; first and second laws of thermodynamics; equations of state; fundamental equations of thermodynamics; laws of perfect gases; properties of vapors including development

and use of tables and charts; thermodynamic processes of gases, and saturated and superheated vapors; and the general equations for the flow of fluids.

Preparation: P 4

4 class hours

Psychology

Ps 1 Introduction to Differential Psychology

An elementary survey of the psychology of individual differences including personality differences together with a presentation of some of the practical applications of the findings of differential psychology.

3 class hours

Ps 2 General Psychology

An introduction to general experimental psychology. The topics include learning, memory, thought, imagination, motivation, emotion, sensation, and perception.

Preparation: Ps 1

3 class hours

Ps 3 Experimental Psychology

Introductory laboratory. Experiments on sensory and motor phenomena, perception, learning, memory, and thought. Provides practice in the organization, statistical treatment, and interpretation of experimental data. Lectures and demonstrations in addition to laboratory work.

Prerequisite: Ps 2

2 class hours, 4 lab. hours

Ps 4 Differential Psychology

Introductory laboratory. Requires the solution of miniature problems involving the procedures used in computing scale values for rank orders, constructing rating scales, questionnaires, and mental tests.

Preparation: Ps 3

2 class hours, 4 lab. hours

**Ps 5 Educational Psychology*

Considers the applications of psychological facts and principles to educational problems and practices.

Prerequisite: Ps 2

4 class hours

*May be counted for credit in either Psychology or Education.

Ps 7 Social Psychology of Everyday Life

A course devoted to the psychological examination of some of the phenomena observable in everyday social life. This includes an analysis of the socialization process, the development and role of language in everyday life, and those problems which are particularly important in wartime — propaganda, rumor, and morale.

3 class hours

Ps 8 Social Psychology, Theory, and Methods

A survey of the field of social psychological theory and an examination of the experimental techniques utilized in this field of psychology. Special topics are the study of leadership and co-operation, and the measurement of attitudes.

3 class hours

Ps 9 Psychology of Personality

Presents a survey of historical and contemporary theories of the nature of personality. The problems of the generality of traits, the consistency of expression, and the relation of cultural factors to personality, growth, and integration will be discussed.

Prerequisite: Ps 2

4 class hours

Ps 10 Abnormal Psychology

An introduction to the field of psychopathology. The psychology of the neuroses and the minor disturbances of everyday life are emphasized. Interpretation of clinical findings in the light of some contemporary schools of psychology is included.

Preparation: Ps 9

4 class hours

Ps 13 Psychological Testing

The application of psychological test methods in educational and clinical settings. May be elected with the consent of the department by qualified seniors majoring in Psychology.

Prerequisite: Ps 4

3 class hours

Ps 14 Advanced Experimental Laboratory

Individual research. May be elected with the consent of the department by qualified seniors majoring in Psychology.

Prerequisite: Ps 3

8 lab. hours

Ps 61 Seminar

Assigned readings and reports in theoretical and historical problems. May be elected with the consent of the department by qualified seniors majoring in Psychology.

Ps 62 Seminar

A continuation of Ps 61.

Preparation: Ps 61

*Sociology**S 1 Introduction to Sociology*

In presenting a survey of the origins and sources of human society, this study provides orientation for the courses in principles and problems which follow. The several theories of organic evolution are discussed. The antiquity of man and basic anthropological data are considered. The racial and ethnic groupings of man are then studied in the light of biological, geographical, and cultural factors.

3 class hours

S 2 Principles of Sociology

Facts and principles basic to a general knowledge of the field of sociology are presented. The origins, forms, and forces of human associations are discussed. Consideration is given the several leading schools of sociological thought. The course is designed to meet the needs of the student who desires only an elementary survey of the subject as well as the student who plans to take advanced courses in social science.

3 class hours

S 3 Social Problems

Attention is given the nature, complex causation, and inter-relatedness of social problems in general. Cultural change, with its attendant lags, as well as other social forces and conflicts are studied. While sociological theory is occasionally introduced to clarify the problem at hand, the course is essentially practical in character. Such problems as poverty and unemployment, race antagonisms, population pressures, and the broken home are considered. Optional field trips to various institutions give concreteness to the problems studied.

Preparation: S 1, S 2

3 class hours

S 4 Social Pathology

Similar to the course in Social Problems in background and approach, this study deals with the maladjustments and ills of human society. Emphasis is given those pathological conditions which exist in relations between the individual and the group. Typical subjects presented include mental defectiveness and dis-

ease, alcoholism and drug addiction, suicide, delinquency and crime, and pathologies of domestic relations. The field trips arranged for this course add to the practical knowledge of the social ills which are studied.

Preparation: S 1, S 2

3 class hours

S 5 Criminology

Delinquency and crime are defined and classified, and their causal factors indicated. The various theories as to what makes criminals are dealt with, and a brief history of crime is sketched. Legal and economic aspects of crime are summarized, but the study is mainly sociological. Prevention and correction of criminal behavior are stressed. Local institutions are visited.

Preparation: S 1, S 2

3 class hours

S 6 Penology

Closely related to S 5, this subject begins with an historical treatment of the punishment of criminals. Time is devoted chiefly to an understanding of modern methods and problems of dealing with offenders. Field trips are taken to criminal courts and penal institutions.

Preparation: S 5

3 class hours

S 7 Principles of Social Ethics

To clarify the meaning of morality in social relations is the aim of this study. Right and wrong conduct is analyzed in the light of the highest values for human society. Moral laws are discussed, and the various systems of ethics are evaluated. Scientific attitudes are encouraged in order that one's moral judgments may be compatible with one's best reflective thought.

Preparation: S 1, S 2

3 class hours

S 8 Problems in Social Ethics

Problems arising from differences in moral standards found in the various social groups will be examined. The question of ethical relativism and determinism will be considered. A selected number of specific problems in social ethics will be discussed.

Preparation: S 7

3 class hours

S 9 The Family

The historical development of the family is first traced, after which the course focuses upon the modern family. The monogamic family is contrasted with other types, and such unconventional forms as companionate and trial marriages are evaluated. Then follows an intensive study of family problems.

Preparation: S 1, S 2

3 class hours

S 10 *The Family*

A continuation of S 9. A constructive program is presented for strengthening the family as a basic unit in society.

Preparation: S 9

3 class hours

S 11 *Social Control*

The methods by which social forces are controlled provide the fundamental material of the course. External and internal types of control of the social organism are discussed. The use of violence, the power of public opinion, and the application of certain principles of social psychology are examined.

Preparation: S 3, S 4, Ph 2

3 class hours

S 12 *Social Progress*

The historical development of the theory of progress, contemporary concepts of social progress, the agents of progress, and the phenomenon of regression are several of the subjects for study.

Preparation: S 11

3 class hours

S 13 *Population Problems*

Population pressure, contrasts between urban and rural population, migration, and pertinent types of social mobility are studied in this course. After a brief survey of population problems in several areas of Europe and the Orient, attention is then given to a careful analysis of population conditions in the United States. The many factors are shown which intensify the problem in our country in spite of its wide area. What principles have superseded those of Malthus? What immigration policies are most sound for our country in the long run? What methods can be adopted which will relieve the population pressure in our great cities? Such questions as these will be discussed.

Preparation: S 1, S 2

3 class hours

S 14 *Urban Sociology*

Upon studying the complex human society found in the various cities of the world, this course then turns to an analysis of the modern American city. Its types, social values, and pathological elements are discussed. Methods of city planning are considered. The belief on the part of some sociologists that democracy is doomed by its cities is examined in the light of typical problems of urban society.

Preparation: S 1, S 2

3 class hours

S 15 *History of Sociological Thought*

With emphasis upon modern authorities, this course surveys the chief systems of sociological thought and the personalities who have made outstanding contributions to the field. Such leading thinkers as Sumner, Ward, Gumpłowicz, Durkheim, and Pareto are studied. The relation of sociological theory to contemporary world movements is stressed.

Preparation: S 3, S 4, Ph 2

3 class hours

S 16 *Sociology of Religion*

Religious beliefs, practices, and institutions are examined and evaluated in relation to their effects upon society at large. The great religions of the world are compared in the light of their contributions to the well-being and progress of mankind. The social creeds of the several leading denominations in America are discussed with respect to their attitudes towards race, industry, war, and other social problems. The influences of organized religion upon politics and educational institutions are given attention.

Preparation: S 3, S 4

3 class hours

S 61 *Seminar*

Assigned readings and reports on selected topics. May be elected with the consent of the department by qualified seniors majoring in Sociology.

S 62 *Seminar*

A continuation of S 61.

Preparation: S 61

S 65 *Thesis*

See statement on Theses below.

S 66 *Thesis*

A continuation of S 65.

Theses

A thesis in the College of Liberal Arts is considered to be an essay involving the statement, analysis, and solution of some problem in a special field. Its purpose is to demonstrate a satisfactory degree of initiative and power of original thought and work on the part of the candidate. A mere resume of existing knowledge in some subject is not acceptable. This, it is true, must usually be made, but in addition thereto the student must show an ability to deal constructively with the data which has

been collected and the power to draw significant and reliable conclusions from the investigations. The completed thesis will be examined for acceptance or rejection from the technical viewpoint by the major departments interested and then forwarded to the Secretary of the Faculty. Final approval of the thesis rests with the Dean. When it is accepted, the thesis becomes the property of the college and is not to be printed, published, nor in any other way made public except in such manner as the major department and the Dean shall jointly approve.

Frequently thesis subjects may be chosen on problems arising where the student is employed at co-operative work. Employers are usually glad to consult with the student in the selection of the subject and the subsequent development of the thesis.

When theses are conducted in this manner, it is understood that the employer is not expected by the University to assume any expense of the thesis nor to furnish any supplies or equipment to be used in the development of the thesis other than those which he may consider it advisable and desirable to place at the disposal of the students. The regulations governing the use of laboratories and buildings of the co-operating firms will vary in practically all cases and each student must naturally be governed definitely by the regulations existing at the plant where the thesis is to be conducted.

It is understood that the thesis work must not in any way interfere with the regular required co-operative work and must be done during hours distinctly outside of regular co-operative work hours unless special request is made by the co-operating firm for some other arrangement.

Theses conducted in conjunction with co-operating firms must be submitted in duplicate, one copy to be presented by the Dean to the co-operating employer.

Theses are not required of seniors in the College of Liberal Arts. To certain students who wish to do so, however, the privilege of writing a thesis may be granted by the Faculty Committee on Theses in accordance with the following regulations:

1. To be eligible to write a thesis a student must have attained a scholastic average of at least 2.0 or better through the middler year and the first half of the junior year.

2. Students who have met this minimum requirement may petition for the privilege of substituting a thesis for formal classroom work.

3. In this petition the student must state the subject which is to be investigated and give a brief statement of the purpose and scope of the proposed thesis.

4. Petitions for the privilege of writing theses must be submitted in writing to the head of the student's major department not later than the middle of the second term of the junior year.

NORTHEASTERN UNIVERSITY

C O L L E G E O F

Business Administration

Admission Requirements *and* Courses of Study

1944-1946



(CO-EDUCATIONAL)

BOSTON 15, MASSACHUSETTS

July, 1944

THE COLLEGE OF BUSINESS ADMINISTRATION

Aims and Methods

ALTHOUGH it is true that collegiate training for business is relatively new in the field of higher education, it is also evident that collegiate business schools are beyond the stage of early experimentation and have emerged on a level with other college courses recognized as higher education. There is a certain advantage in newness in that the mere youth of the college keeps it up to date in its outlook and scope of activity. In addition, it is not bound by the traditional but obsolete practices sometimes found in older branches of education.

We hear a good deal today about the increasing need for specialists in business. It is asserted that modern business institutions have become so large that no one individual can administer the many matters of routine involving executive judgment. The need for specialists is self-evident, but the training best suited for preparing the individual to take over specialized executive authority is not so evident. There are many schools offering a short course of training in preparation for these specialized positions. Such training cannot give the individual the breadth of vision needed to go beyond minor managerial jobs demanding attention to the exhausting details of daily routine.

To pass beyond this on the way to responsibility of truly executive nature a background of general business and related knowledge is essential. This background should precede the specialized study into a particular branch of business, enabling one to see the whole business and industrial picture and not merely one branch of it. Executive administration cannot be taught with any adequacy by attacking one subject, no matter how carefully planned the approach and how thorough the course of study. For instance, accounting is not the only means of arriving at a production budget based on sales estimates; it is but one of the tools. A knowledge of marketing, finance, statistics, and management technique are also needed. Vision and sound judgment can then make all of these branches of information serve to best advantage.

Aims of the College

In keeping with current trends in collegiate business education, the educational policy of the college is directed toward the achievement of the following purposes:

First: To offer that type of education for business which will enable men and women to select most advisedly the field of business best suited to their aptitudes. The Co-operative Plan is particularly effective in this respect.

Second: To build for breadth of perspective in preference to over-specialization with its narrowing effects; therefore, to eliminate haphazard selection of courses, through concentration upon balanced, carefully co-ordinated curricula, and thus to provide an adequate background for specialization as need arises.

Third: To provide a thorough knowledge of fundamental economic laws and an understanding of their applications in business.

Fourth: To develop the habits of accurate thinking that are essential to sound judgment.

Fifth: To develop in all students attitudes and ideals that are ethically sound and socially desirable.

Methods

In order that these aims may be realized as fully as possible, the college makes use of the problem and the case methods of instruction in addition to the lecture and recitation system. Mere textbook reading alone is almost valueless; students tend to accept without question what the textbook presents. Instead, they should learn to analyze every proposition, to challenge unsupported assertions, to think independently, and to support their thinking with logic and facts.

Hence, concrete problems and cases which executives have faced in accounting, marketing, organizing, and the like constitute the bulk of class work. Students analyze problems, break them into their constituent parts, discover and list the factors for and against possible solutions, and work out a logical conclusion. In class they discuss their work with their instructors in the light of the latter's broader knowledge.

Such a method tends to develop an executive attitude. No lecture or mere reading of textbooks can do so. Students gain skill and facility in solving problems by actually solving many hundreds of them, thereby accumulating a ripe experience seldom open to the petty employee buried in routine and mechanical detail. What counts in business, as elsewhere, is not solely whether one possesses much knowledge, but whether through his knowledge one can logically and effectively solve the problems he confronts, or possibly prevent problems from arising. Experience in solving typical problems provides a background for anticipating and forestalling similar ones as well as for solving others that may arise.

Equipment

Visual Education Equipment

Classroom instruction is made more effective by the use of motion pictures and lantern slides. For this purpose there are available projectors for 16 mm. and 35 mm. films. Complete sound motion picture apparatus is also available. New and powerful Delineascopes project the lantern slides. Stationary as well as portable daylight screens enable students to take notes while viewing the pictures.

Business Laboratory

Students have available for laboratory work in accounting and statistical methods all of the commonly used office machines. These are available in a special room together with necessary library services, including Moody's Manuals, Poor's Manuals, and various charts and maps.

The laboratory is in charge of a graduate assistant whose work is to maintain the equipment in excellent condition and to give instruction in the use of the various office machines.

Principal pieces of equipment in the laboratory include duplicators, typewriters, hand and electric calculators, and both hand and electric adding machines.

Admission Requirements

Applicants for admission to the freshman class without restrictions must qualify by one of the following methods:

1. Graduation from an approved course of study in an accredited secondary school, including prescribed subjects listed below.

2. Completion of fifteen acceptable secondary school units with a degree of proficiency satisfactory to the Department of Admissions.

3. Examinations.

(Certificate of entrance examinations passed for admission to recognized colleges and technical schools may be accepted.)

Prescribed Subjects for Admission

College of Business Administration

Mathematics (Algebra recommended)	1 unit
Natural Science	1 unit
History, Social Studies and/or foreign language	3 units
English	3 units
*Electives	7 units
Total	15 units

A unit is a credit given to an acceptable secondary school course which meets at least four times a week for periods of not less than forty minutes each throughout the school year.

Entrance examinations are not required of students whose transcripts of record are acceptable, but the Committee on Admissions reserves the right to require a candidate to be present for an examination in any subjects that it may deem necessary because of some weakness in the secondary school record.

Other Requirements

These formal requirements are necessary and desirable in that they tend to provide all entering students with a common ground upon which the first year of the college curriculum can be based. But academic credits alone are not an adequate indication of a student's ability to profit by a college education. Consequently, the Department of Admissions takes into consideration, along with the formal requirements stated above, many other factors regarding candidates for the freshman class. The Committee con-

*Not less than four of the "electives" must be in one or more of the following academic branches: Languages, Natural Science, Mathematics, Social Sciences, History.

siders student's interests and aptitudes in so far as these can be determined, capacity for hard work, attitude toward classmates and teachers in high school, physical stamina, and most important of all — character. In this way the University seeks to select for its student body those who not only meet the academic admission requirements but who also give promise of acquitting themselves creditably in the rigorous program of training afforded by the Cooperative Plan and of later becoming useful members of society.

Personal Interview

Candidates for admission should communicate with the Director of Admissions, who will advise them frankly on the basis of past experience. A personal interview is always preferred to correspondence, and parents are urged to accompany the applicant whenever this is possible. Effective guidance depends in large measure upon a complete knowledge of a candidate's background and problems. Parents invariably are able to contribute much information that aids the admissions officer in arriving at a decision.

Candidates are urged to visit the Office of Admissions for personal interview if it is possible for them to do so before submitting their applications. Office hours of the Department are from 9:00 A.M. to 4:00 P.M. daily; Saturdays to 12:00 M. The Director of Admissions will interview applicants on Wednesday evenings but by appointment only.

Application for Admission

Each applicant for admission is required to fill out an application blank stating previous education, as well as the names of persons to whom reference may be made.

An application fee of five dollars (\$5.00) is required when the application is filed. This fee is non-returnable.

The last page of this catalog is in the form of an application blank. It should be filled out in ink and forwarded with the required five dollar fee to the Director of Admissions, Northeastern University, Boston, Mass. Checks should be made out to Northeastern University.

Upon receipt of the application, properly filled out, the college at once looks up the applicant's references and secondary school records. When replies have been received to the various inquiries, the applicant is informed as to his eligibility for admission.

An application should be filed at least a month prior to the date of registration.

The University reserves the right to place any entering student upon an indefinite trial period. Reclassification will be determined upon the academic success of the student.

Registration

Eligibility for admission does not constitute registration. Freshmen will register at the University on July 10, 1944, Sept. 25, 1944, March 12, 1945, June 11, 1945, Sept. 10, 1945. Students are not considered to have met the requirements for admission until they have successfully passed the required physical examination.

Advanced Standing

Students transferring from approved colleges will be admitted to advanced standing provided their records warrant it. Whenever a student enters with advanced standing and later proves to have had inadequate preparation in any of his prerequisite subjects, the faculty reserves the right to require the student to make up such deficiencies.

Applicants seeking advanced standing should arrange to have transcripts of their previous college records forwarded with their initial inquiry. Students admitted to advanced standing are not eligible for placement for co-operative work until they have completed a full year of academic work at the University.

Entrance Examinations

Students who are deficient in required units for admission may remove these deficiencies by examination. Such examinations are held at the University unless special arrangements are made with the Department of Admissions to administer them elsewhere.

Students are advised to take such examinations on the earliest possible date in order that any deficiencies which they fail to clear may be made up in time to permit registration with the desired class and division.

The time of examinations is as follows:

10:00 A.M. to 12:00 M.

1:00 P.M. to 3:00 P.M.

During the current year examinations will be given approximately three weeks before each registration date.

Requirements for Graduation

Students may qualify for the degree of Bachelor of Science in Business Administration in one of the following options:

Accounting, Marketing and Advertising, Public Administration, Banking and Finance, Industrial Administration.

Candidates for the Bachelor of Science degree must complete all of the prescribed work of the curriculum in which they seek to qualify with a degree of proficiency acceptable to the faculty. Students who undertake co-operative work assignments must also meet the requirements of the Department of Co-operative Work before they become eligible for their degrees.

Students transferring from another college or university are not eligible to receive the B.S. degree until they have completed at least one academic year at Northeastern immediately preceding their graduation.

Scholarship Requirements

Students who fail to show satisfactory standards of general efficiency in their professional fields may be required to demonstrate their qualifications for the degree by taking such additional work as the faculty may prescribe. Those who are clearly unable to meet the accepted standard of attainment may be required to withdraw from the University. The degree conferred not only represents the formal completion of the subjects in the selected course of study but also indicates professional competence in the designated field of business administration.

Graduation with Honor

Candidates who have achieved distinctly superior attainment in their academic work will be graduated with honor. Upon special vote of the faculty a limited number of this group may be graduated with high honor or with highest honor. Students must have been in attendance at the University at least three years before they may become eligible for honors at graduation.

Thesis Option

Theses are not required of candidates for the degree of Bachelor of Science in Business Administration. Students who show special aptitude for thesis work, however, may be permitted to substitute an appropriate thesis for equivalent work in class. Such permission must be obtained by the candidate from the Dean of the College.

The Programs of Study

First Year

A full year of thirty-two weeks is devoted to a thorough understanding of the basic principles underlying the conduct of business.

The student is also acquainted with the existing business structure and given an appreciation of its conception and growth in terms of the distribution of industrial resources, and the historical development of business and industry.

Other basic courses are in keeping with the personal needs of the student and preparatory to the work which follows in the upper years of his course. Throughout the year each student has the friendly counsel and guidance of a faculty adviser whose aim is to help bridge the gap between high school and college.

Upperclass Work

Co-operative training is started in the second year. Two terms of college work are required.

In the third year, the completion of the foundation program gives way to the beginnings of specialized training.

At the end of the third year the students elect the professional curricular offerings in accordance with their major fields of interest and natural aptitudes.

The Professional Options

All students are required to take common courses in their fourth and fifth years which are deemed necessary for a well-rounded training. These are pursued jointly with the professional work which has been selected, with a view to meeting the changing and expanding needs of present-day business conduct, while at the same time meeting the vocational needs of the students by way of earning a living. A brief statement of the vocational opportunities in the fields of work represented by each of the professional options follows:

I. Accounting

Many successful careers are open to the professional accountants. Their services are demanded by business, commerce and industry. Public and private enterprises seek adequately trained men and women. Better known among the wide variety of titles descriptive of their work are public and private accountant, cost accountant, resident and traveling auditor, credit manager, statistician, investigator, adjuster, and financial accountant.

II. Banking and Finance

Financial institutions serving present-day business and industry are its life stream. Any list of these organizations which are indispensable in the conduct of business must include banks, insurance companies, investment houses, credit concerns, financial exchanges, business forecasting organizations, financial service institutions, mortgage companies, national and local real estate brokerage firms, and appraisers.

Specific courses offered in Northeastern University's College of Business Administration open the door to a host of careers in these institutions as well as the many governmental regulatory agencies controlling their operations.

III. Marketing and Advertising

Business and industry must sell their services and products to each other and to the general public. Successful selling means more than being a salesman. It demands knowledge of distribution channels, markets and buying habits, as well as sales resistance. It means also knowing how to buy in order to sell and then how to organize, promote, and carry out a sales campaign.

The following list is representative of the vast array of marketing and advertising occupations: sales manager, supervisor, analyst and correspondent, advertising manager, promotion manager, copy supervisor, space buyer, and publicity director; market, product and sales analyst, industrial salesman, sales personnel supervisor, field representative, missionary salesman, manufacturer's agent, merchandise manager, and retail store operator.

IV. Industrial Administration

Increasingly the manufacturer is looking to the business school for well-trained men and women to undertake cost work, production control, planning, methods analysis, and the solution of sales problems peculiar to the manufacturer. Moreover, industrial administrators are increasingly turning attention to the effective administration of better employer-employee relations. This points the way toward a growing need for trained managers of personnel relations.

The vocational opportunities of industrial administration include personnel management, traffic management, office management, industrial purchasing; manufacturing, supervisory and executive work, inventory and production control, production planning, setting shop standards, wage rate administration, and supervision of shop personnel.

V. Public Administration

The tremendous increase in the number of agencies regulating both public and private enterprise has opened up an increasing number of desirable career posts in both the state and federal

governments for both men and women. These afford real opportunities for those who have training in the fundamentals of business, together with special training in the problems of administration as related to government work. The typical positions include division chiefs, bureau heads, department heads, foreign and domestic representatives of the many departments, bureaus and agencies of our government.

Pre-legal Curriculum

Effective September 1, 1938, by a ruling of the Supreme Judicial Court of Massachusetts, in order to be eligible for examination for admission to the bar, an applicant must have completed certain general educational requirements before beginning his legal education. Briefly, this general education must comprise graduation from a four-year high school and the completion of not less than half of the work accepted for the Bachelor's degree in a college approved by the Board of Bar Examiners.

Recognizing that business training furnishes an excellent background for pre-legal training, the College of Business Administration offers a pre-legal curriculum. This consists of taking an amount of work in the college equivalent to that required for admission to specific law schools in the Commonwealth, and usually requires residence in school during the entire freshman year and for 36 weeks during the sophomore year.

<i>First Year</i>					
FIRST TERM			SECOND TERM		
No.	Course	Class Hours	No.	Course	Class Hours
<i>Regular Program</i>					
E 1-B	English.....	3	E 2-B	English.....	3
Ec 1	Economic Geography..	3	Ec 2	Commercial and Ind. Hist. of the U. S.....	4
Ac 1	Accounting I.....	4	Ac 2	Accounting II.....	4
H 1	History of Civilization..	4	H 2	History of Civilization..	4
Gv 1	American Government	3	Gv 2	American Government	3
PE 1	Hygiene.....	1		Orientation	1
PE 3	Physical Training.....	2	PE 4	Physical Training.....	2
		20			21

The curricula in the second and third years are common in all fields of specialization and are listed below.

<i>Second Year</i>					
L 1	Legal Bases of Business	3	L 2	Legal Bases of Business	3
Ec 3	Economic Principles...	3	Ec 4	Economic Principles...	3
Ac 5	Cost Accounting.....	4	Ac 6	Cost Accounting.....	4
IA 1	Indus. Management I..	3	IA 1	Indus. Management II..	3
E 3-B	Bus. Communication..	3	E 4-B	Bus. Communication..	3
		16			16

<i>Third Year</i>					
Ec 5	Economic Problems...	3	Ec 6	Economic Problems...	3
FI 1	Business Finance.....	3	FI 2	Finance Problems.....	3
Ac 7	Accounting Problems..	4	Ac 8	Accounting Problems..	4
MA 1	Marketing Principles...	4	MA 2	Marketing Principles...	4
S 1	Sociology.....	3	S 2	Sociology.....	3
		17			17

Fourth and Fifth Years

The courses in the fourth and fifth years can be elected from among the courses detailed in the pages which follow. Elections should be concentrated in the field of specialization chosen. Approval of the Dean of the College must be secured for the election of all courses in these last two years.

A total of 142 semester hours credit is required for the degree.

Synopses of Courses of Instruction

On the pages which follow are given the synopses of courses offered in the several curricula of the college. Courses offered in the first semester bear odd numbers; those offered in the second semester bear even numbers.

The term prerequisite indicates a course that must be completed with a passing grade before a student will be permitted to register for the advanced course to which it applies. The term preparation indicates a course of such a preparatory nature that a student undertaking an advanced course, without having had the preparation course specified, will ordinarily find himself greatly handicapped, and may not register in the advanced course without the consent of the instructor.

Freshmen courses extend over a full semester of 16 weeks. Upperclass courses are uniformly 12 weeks in length each term. The University reserves the right to withdraw any course in which there is insufficient enrollment.

Accounting

AC 1 Accounting I

This course presents the fundamental principles of accounting theory and practice in a manner designed to meet the needs of students who intend to specialize in accounting as well as those who require a knowledge of accounting as a preparation for the study of banking and finance, production management, and marketing. Beginning with a consideration of the need for and the purpose served by accounting, a study of the balance sheet and operating statement is presented so that the ultimate goal and purpose of accounting is understood before the mechanical methods of recording business transactions are presented. The course then takes up specific balance sheet accounts; the law of debit and credit; the theory of nominal accounts; construction and interpretation of accounts; the recording process; the trial balance; construction of financial statements; the need for adjustments at the end of the period; depreciation; deferred and accrued items.

4 class hours

AC 2 Accounting II

This course continues the work of the first semester with increased emphasis placed on accounting and interpretation of accounts. The main topics covered are closing of books, starting the new period, comparative statements, control accounts, and the operation of petty cash systems.

4 class hours

AC 5 Cost Accounting

The structure of factory costs from the executive's viewpoint is studied in this course. The subject is approached chiefly from the management point of view. Problems are presented in a summarized form in order to stress the fundamental aspects of costs. Managerial control through the use of accounts is emphasized at the beginning of the course. Some of the specific topics covered are accumulation and distribution of cost data, process cost, job cost, historical cost, estimated cost, standard cost, and spoilage cost.

Prerequisite: AC 2

4 class hours, 2 lab. hours

AC 6 Cost Accounting

This course is designed to develop in the student the managerial ability to control production, operating, and distribution costs through the use of cost accounting and the budget. Methods of costing and controlling materials, labor, and expenses are considered in detail. Cost variations are analyzed. Joint cost and by-product cost are introduced.

Prerequisite: AC 2

4 class hours, 2 lab. hours

AC 7 Accounting Problems

The aim of this course is to develop the broad viewpoint, analytical power, and constructive and critical ability necessary to apply properly a knowledge of accounting principles to specific problems and situations. Consistency in the application of principles is stressed. The major portion of the course is devoted to the study of specific problems dealing with capital and revenue expenditures; depreciation, appraisals and reserves; branch accounting; and analysis of statements.

Prerequisite: AC 2

4 class hours

AC 8 Accounting Problems

The method of approach in this course is like that followed in AC 7, with greater emphasis on the financial aspects of a business. Specific topics deal with bonds, annuities, sinking fund, reserves, investment accounting, application of funds, consignment sales, correction of statements, venture accounts, receivers accounts and insurance.

Prerequisite: AC 2

4 class hours

AC 9 C.P.A. Problems

The purpose of this course is to provide for the application of the knowledge of accounting principles and practice gained in the

preceding courses to the analysis and solution of complex problems involving a recognition of the economic, legal, and social aspects of various forms of business organization. The course content consists chiefly of problems given in C.P.A. examinations. All phases of partnership, corporation, bond, depletion, cost accounting, consolidation, municipal accounting, bank accounting, adjustments of complex statements and reports, actuarial problems, and institutional accounting will be covered.

Prerequisite: AC 8

5 class hours

AC 10 Income Tax and Public Accounting

The first part of this course covers the fundamental aspects of Federal Income Tax Law and the accounting concepts which arise from its interpretation. The latter part of the course contemplates the application of accounting knowledge to the analysis and interpretation of accounting records. Case material is used to outline the type of procedure best adapted to an intelligent examination of accounting records, and the compilation of reports on which the business manager can base plans for future operations. Specifically, balance sheet audits, detailed audits, and special investigations for credit and other purposes receive attention.

Prerequisite: AC 8

5 class hours

Banking and Finance

FI 3 Business Finance

The fundamental principles of finance are approached in this course from the point of view of the business man. A study is made of the two basic ways of financing, namely, equity and borrowed funds, and their use in original and expansion financing. In addition, consideration is given to working capital requirements and the distinctions between short-term and long-term financing.

3 class hours

FI 4 Finance Problems

A continuation of FI 3 Business Finance. This course deals with the application of the principles of finance to such problems as surplus, dividend and reserve policies, the relation of the corporation to banks and the investing public, and the problems of both trade and economic risk. The course includes an analysis of such combinations as trusts, holding companies, consolidations, and pools from both the public and financial points of view. Analysis is also made of aspects of reorganization problems in the light of present legislation. The course concludes with an analysis of government and state agencies now supplementing private sources of business funds.

3 class hours

FI 6 Banking and Business

Because students taking this course have already received through their study of economics some instruction in the general principles of money and credit, particular attention is given to the bank in its relation to the business man, and the function of the Federal Reserve System as a central banking agency. An analysis is made of the more basic aspects of Federal Reserve policy as they affect business and the banking community. Current problems are carefully considered.

Prerequisite: Ec 3

3 class hours

FI 8 Advanced Banking Problems

In this course students are taught to look at the problems confronting the banker from the executive's point of view. Through a series of problems, most of which are actual cases, the matter of loan and investment policies will be studied at length with other problems concerning methods of increasing the bank's efficiency, volume of business, and profits receiving the proper amount of attention.

4 class hours

FI 9 Investments

This course consists of a review of the principles of investment, a study of investment policies, and the mechanics and mathematics of investments. It includes a basic study of the advantages and disadvantages of stocks and bonds as media of investment from a present and historical basis.

4 class hours

FI 10 Investments

A practical study is made of the various fields of investment such as industrials, rails, banks, real estate, government, and foreign investments. Emphasis is placed on security analysis as it pertains to the individual issues. The course not only concerns itself with an intensive study of particular companies and issues, but also includes an analysis of the various current methods of market analysis.

4 class hours

FI 12 Public Finance

One of the biggest problems confronting the people of all nations following the war will be the question of taxation. In recognition of this fact and of the enormous difficulties facing business organizations and individuals because of the tax burden, the course in Public Finance is offered. This course teaches the kinds of taxes imposed by municipal, state, and federal governing bodies.

Attention is given to the "trend" in taxation. Governmental borrowings and revenues are studied as to their general effect on the finances of individuals and business concerns. A large part of the time allowed for this course is spent in a study of the sources of revenue such as commodity taxes, highway taxes, general property taxes, taxes on business, poll taxes, income taxes, and death taxes.

3 class hours

FI 13 Real Estate Practice and Appraising

Consideration of land as an economic institution, and the importance of a sound land policy; the problems of owners and builders, the service to be rendered the ordinary purchaser; organization of the real estate office, renting, leasing, and property management; the importance of acquaintance with valuation principles; building operations, the financing of transactions, subdividing and planning; taxation, legal considerations, professional relationships.

4 class hours

FI 14 Insurance Principles and Practices

The purpose of the course is to provide a comprehensive knowledge of insurance principles and coverage such as will provide a broad foundation for the student who plans to enter the business of insurance or enable the man or woman in business to plan a satisfactory program for personal needs or business responsibilities. Content: the basic principles of insurance, solving the economic problem of risk, types of insurance contracts, legal interpretation of the insurance contract, types of insurance companies, the needs of the buyer of insurance, co-operative organizations in the field of insurance.

4 class hours

Marketing and Advertising

MA 1 Marketing Principles

This course is designed to acquaint the student with the principles underlying the distribution of merchandise. Textbook assignments and lectures introduce a knowledge of the place of marketing in our modern economic order; the basic structure of markets; the main functions of marketing such as assembling, grading, storing, buying, selling and financing of goods; and the general classification of commodities into major types for the purpose of analytical study. The course gives further and more detailed consideration to the activities of the several types of middlemen such as brokers, wholesalers, and retailers, and their utilization

as channels of distribution; the work of the commodity exchanges and co-operative marketing associations; and the development of chain stores, mail order houses, and department stores.

Other topics considered are market risk, pricing, selling terms and discounts, hedging, advertising, and the legal aspects of price maintenance. Supplementary lectures and illustrative material will be given to explain in some detail the methods used in marketing several specific commodities.

4 class hours

MA 2 Marketing Problems

Using actual case material, this course analyzes and suggests solutions to a wide variety of selling problems in typical industries and trades. It is aimed throughout to develop the analytical powers of the student so that he may decide a problem from the viewpoint of a marketing executive. Consideration is given to consumers' buying habits and buying motives, to the important types of retail and wholesale enterprise, and to an analysis of the channels of distribution with the object of formulating a basis for selecting suitable channels for various products. The marketing of industrial goods is studied, including certain special problems such as hedging. Producer's co-operative marketing is also given attention.

4 class hours

MA 3 Sales Management

The study of actual case material forms the basis of this course. In each case the facts are analyzed and a solution proposed. The major problems of sales management may be stated as questions: What to sell? To whom shall products be sold? At what price and terms shall products be sold? The answering of these questions involves a consideration of merchandising policies and organization, market channels, market research and analysis, and pricing and credit policies.

4 class hours

MA 4 Sales Management

Continuing MA 3 Sales Management, this course deals primarily with the following problems: sales methods, sales promotion, sales campaigns, management of sales force, and the planning and control of sales operations.

In the field of sales management the solution of problems involves two types of mental effort. First, there is the suggestion of plans or alternatives, a task requiring imagination; second, there is the choice between the alternatives so suggested, a matter of judgment. It is essential that the student of business management acquire the habit of weighing alternatives before deciding, but much more is to be gained if the student possesses and develops imagination.

The purpose of the courses in sales management is principally to develop an approach and technique for the solution of problems, so the student will be able to analyze and think through the problems which must be faced later when he arrives at a post of responsibility.

4 class hours

MA 5 Advertising Principles

The purpose of this course is to acquaint the student with the fundamental principles and facts which must be known by the men and women who are planning to select advertising as a career. The economic background of the subject and its development is presented, together with a survey of the methods for planning and preparing advertisements actually followed in advertising offices. Consideration is given to human instincts, buying habits, argumentative and suggestive appeals, color, headlines, layout, illustrations, and trademarks.

4 class hours

MA 6 Advertising Problems

The analysis and solution of a wide variety of advertising problems and cases based upon the actual business experience of a large number of firms constitutes the content of this course.

4 class hours

MA 7 Retail Store Management

The purpose of this course is to study the principles of successful retailing and to solve actual problems involving these principles. Layout, location and equipment of retail stores are first considered. Store organization, market contacts, buying, receiving and marking merchandise, and invoice procedure are taken up next. Mark-up and mark-down are dealt with in detail through practical examples requiring solution by the students, as are inventory and stock control methods. Merchandise planning is discussed and illustrated.

4 class hours

MA 8 Retail Merchandising

This course continues the work of Retail Store Management, dealing with expense distribution, retail credits and collections, and with special phases of retail accounting. Other topics considered are fashion, salesmanship, customer service, and the training and welfare of employees. The promotion of sales events and retail advertising practices are analyzed from the viewpoint of the store executive.

4 class hours

Industrial Administration

IA 1 Industrial Management I

The course in industrial management places emphasis on the administrative and profit-making phases of factory and plant operation. A textbook is used to present elementary principles and problem material which are supplemented by lectures.

The first part of the course presents a brief historical background of U. S. industry; this is followed by a treatment of the location of the plant; plant services and material handling; plant design, structure, and layout; standardization, simplification, and specialization.

3 class hours

IA 2 Industrial Management II

This course is a continuation of Industrial Management IA 1. It deals with the control of plant operations. Each department of a modern industrial concern is considered, emphasis being placed on the organization and management problems confronted and how they may be handled, with the intention that the student shall become familiar with the activities and general working of each department and the relationship which the departments hold to one another and to the business as a whole. In detail are considered budgeting, standards of performance (time and motion study, wage systems), organization, routing, scheduling, dispatching, inventory control, quality control, and visual controls such as the organization chart, planning board, and departmental report.

3 class hours

IA 3 Personnel Administration

A consideration of what modern industry is doing in making an application of science to the obtaining and retaining of an effective and co-operative working force. The student studies thoroughly personnel administration systems now in use, including the preparation and use of many forms among which are the occupational description, application, and interview blanks, promotion charts, wage scale, personnel control charts, etc. In addition, such subjects as wage payment plans, profit sharing, the training of workmen, workers' security plans, employee representation, collective bargaining, and management relationships are given attention.

4 class hours

IA 4 Personnel Problems

This course brings to the attention of the student an understanding of the related, yet varied, problems with which the modern personnel department is confronted. These include problems of

guidance, placement, job evaluation, adjustment of rates, employee rating systems, development of complete, yet simple, personnel records, etc.

4 class hours

IA 6 Motion and Time Study

This course comprises a detailed study of time and motion study work, a complete study and actual practice in micromotion which is the use of motion pictures in the motion study work, a preparation of simo-charts (the use of colored charts and symbols called Therbligs which show all the elements in an operation cycle), and the making of process charts which is the use of specifically designed symbols, or industrial shorthand, to record motion analysis.

4 class hours

IA 14 Production Processes

A course in the techniques, processes, and machines used in the production of manufactured articles.

The subject matter is presented in lectures supplemented by slides, exhibits, and demonstrations. The processes covered are heat-treating, forging, welding, foundry practice, and die casting. The metallurgical principles involved are correlated with good shop practice in each case.

The construction nomenclature and operation of the following machine tools are discussed: lathe, milling machine, planer, shaper, broaching machine, and grinder.

4 class hours

Public Administration

PA 2 Public Administration I

A study of career service of the local, state, and national government; the administrative positions in career service; the information needed by the government administrator in order to function effectively; and the means for acquiring public administration knowledge.

4 class hours

PA 4 Political Concepts

A critical study is made of the major developments in political theory since Bentham, with special reference to the influence of these developments upon American politics and political institutions. Attention is paid to the modern conflict between the democratic and the totalitarian conceptions of the state.

4 class hours

PA 5 Business and Government

The object of this course is to develop a thorough understanding of the relationships between government and business. The attitude of our government toward business since 1885 as evidenced by legislative, judicial, and executive action will be analyzed in detail.

4 class hours

PA 7 Public Administration II

A study of the subject matter and principles of management necessary for the efficient operation of the government.

4 class hours

PA 8 Public Administration III

This course presents a study of the public relations, fiscal control, and policy-making aspects of public administration, stressing the importance of co-operation among government bureaus, legislative bodies, and the public; and presents to the student an appreciation of the importance of versatility of ability for a successful public career.

4 class hours

Business Law

L 1 Legal Bases of Business

A course presenting the fundamental principles of business law and their relationships to the operations of business enterprise. Since practically every phase of business activity from the organization to the dissolution of a concern rests on a foundation of law, it is essential that the student of business understand the rudimentary legal principles involved. Major topics covered include contracts, agency, negotiable instruments, sales, bailments, carriers, insurance law, suretyship, and bankruptcy.

3 class hours

L 2 Legal Bases of Business

This course deals with the legal and economic phases of business organizations. It discusses the individual proprietorship, partnership, corporation, and business trust, showing how each is formed, operated, and dissolved. The merits, as well as the shortcomings, of each form are treated. Specific problems will deal with the legal requirements, organization expense, operating problems, taxes, and reports required of each of these types of organizations.

3 class hours

Co-ordination

C 11 Business Conference

This course is designed to bring about analytical thinking and systematic planning of the "after-graduation-employment" problem. It is conducted as an open discussion class by the Department of Co-operative Work. Each co-ordinator has in class those students who have been placed and supervised on co-operative work by him. Each student analyzes and applies to himself or herself as the "product" the fundamental principles of merchandising. Prominent men and women who are leaders in the fields of employment counseling, business, or engineering present the employers' viewpoint. Thus the graduating seniors are brought face to face during the year with one of the most important and perplexing problems of life, namely, how to "sell their services," thereby aiming to bring a co-ordinated training of theory and practice to a logical conclusion.

2 class hours

C 12 Business Conference

This course is the sequel to C 11 and consists of the practical application of the techniques of job-getting which have been analyzed and discussed in that course. It is conducted on a conference rather than on a class basis, the major portion of the time being devoted to the planning and writing of letters to and securing interviews with prospective employers. It is intended that this course will culminate in the attainment by each student of his after-graduation job.

2 class hours

English

E 1-B English

A course in composition with emphasis on the basic principles of writing. A brief, comprehensive review of grammar and rhetoric precedes the study of exposition. Works of contemporary essayists and biographers are used as models for weekly themes and studied as examples of modern literature.

3 class hours

E 2-B English

A continuation of E 1-B, with a study of contemporary short stories, plays, and poems. Toward the end of the term a careful study of letter writing is made.

3 class hours

E 3-B Business Communication

A survey of the basic techniques and forms of expression and communication in business. The principles and methods of oral communication are studied, with emphasis on the oral report, the discussion, the conference, and types of the informal speech. The purpose, form, and execution of graphic communication are studied, through the most common and useful types of business chart, graph, and tabulation. By the use of cases, problems, and class exercises, the student is given practice in the forms of business communication.

3 class hours

E 4-B Business Communication

A continuation of the survey of communication methods and forms. Written communication is studied by way of the business letter, memoranda, manuals, handbooks, instruction sheets, and other forms of business writing. The student is taught the principles of expression and written composition, with emphasis on organization, emphasis, and layout of the material to be communicated. Practice is provided through written problems and classroom cases.

3 class hours

E 5-B Advanced Report Writing

An advanced study of current practices in industrial report writing will be the purpose of this course. The emphasis will be placed equally upon matter and form so that professional proficiencies may be correlated with effective presentation.

3 class hours

E 13 Effective Speaking

This course offers practical training in the preparation and presentation of the various types of speeches. The instruction is planned to eliminate defects of voice, posture, and delivery, and to develop in the student an ability to speak easily, naturally, and forcefully.

2 class hours

E 14 Effective Speaking

Continued practice in impromptu and extempore speaking, organization of material, consideration of the audience, and vocabulary building form the basis of the course.

2 class hours

Economics

Ec 1 Economic Geography

In order to provide an adequate background for the study of economics, this first course emphasizes the economic resources of our country and the part played by these resources in the development of our modern industrial society. The course is more concerned with promoting the comprehension of basic concepts than with stressing encyclopedic knowledge of masses of details. In the latter part of the semester frequent use is made of motion pictures to illustrate the processes and peculiar economic characteristics of specific industries.

3 class hours

Ec 2 Commercial and Industrial History of the U. S.

This course is designed to complete the factual background which is needed for the most successful study of theoretical economics. The economic development of the United States is traced from the colonial period to the present with special emphasis upon the period since the Civil War. Stress is laid upon the importance of economic factors and changes in our history in the description of the development of manufacturing, agriculture, domestic and foreign commerce, finance and banking, transportation and labor organizations. Consideration is given to European developments which have been closely related to those of the United States.

4 class hours

Ec 3 Economic Principles

A thorough grounding in the fundamental principles and laws of economics is the aim of this basic course. The main topics include the nature and organization of production, the nature and importance of wants, the relation of money and prices, the process of exchange, and the nature of international trade.

3 class hours

Ec 4 Economic Principles

A continuation of Ec 3. A careful analysis is made of the determination of price under conditions of competition and monopoly, and of the distribution of wealth and income in the form of wages, economic rent, interest, and profits. The elements of insurance are discussed in connection with profits.

Preparation: Ec 3

3 class hours

Ec 5 Economic Problems

In this course the application of economic principles to some of the major economic problems of modern society is emphasized. The problems studied include consumption, protective tariffs and subsidies, labor problems such as unemployment and labor unions, and the business cycle.

Preparation: Ec 3

3 class hours

Ec 6 Economic Problems

A continuation of Ec 5 Economic Problems. Among the problems considered are the following: price stabilization, the agricultural problem, the relation of government to business including the control of monopolies and public utilities, insurance, public finance, and proposals for the remodeling and improving of the economic system.

Preparation: Ec 5

3 class hours

Ec 8 Business Cycles

After a study of the conditions which underlie cyclical fluctuations in prices, volume of trade, physical production, and employment, a careful analysis is made of the more significant theories of the business cycle. The possibilities of controlling such fluctuations and of initiating recovery receive extended attention. Throughout the course emphasis is placed upon the current phase of the business cycle and its peculiar problems.

Preparation: Ec 5, Ec 6

3 class hours

Ec 9 Statistics in Business

This course is intended to give the student an understanding of statistical principles and methods and their practical application in the administration of modern business. A study is made of the nature, sources, collection and organization of business facts; the presentation of such facts in tabular or graphic form, the various averages, measures of dispersion, and the construction and use of index numbers. Laboratory periods provide an opportunity for each student to demonstrate his ability to apply the principles studied.

2 class hours, 2 lab. hours

Ec 10 Statistics in Business

The major portion of this continuation of Ec 9 Statistics in Business concerns the analysis of time series and includes the methods of obtaining trends, seasonal indexes, and the measurement of cyclical variation. Correlation of time series is related to the problems of business forecasting. In the laboratory work each student is required to make a complete analysis of an individual time series, preferably associated with his co-operative work.

2 class hours, 2 lab. hours

Ec 11 Labor Problems

An intensive study of the labor problems of modern industry constitutes the content of this course. Unemployment and other grievances of the worker, including industrial accident and disease, inadequate wages, long hours, undesirable working conditions, child and woman labor, etc., are carefully analyzed. Labor unions, representing the workers' effort to solve the above problems, receive extended attention, with an appraisal of their policies and accomplishments. Employee representation, profit-sharing plans and similar devices of the employer to meet the same problems are also examined critically. The attitude of our government toward these problems and its attempts to handle them are analyzed carefully. The suggestions of other groups and agencies in respect to these problems will be treated, e.g., co-operative movement, socialism.

Prerequisite: Ec 3, Ec 4

4 class hours

Ec 12 Economic Systems

This is an intensive analysis of alternative economic systems. Various criteria for evaluating the different systems are developed.

Prerequisite: Ec 3, Ec 4

3 class hours

Ec 14 International Economic Relations

A careful examination of the important principles of international trade and finance precedes a critical survey of the international commercial policies of modern nations, with special reference to the United States. Such broader problems as the international control of raw materials, exchange restrictions, international cartels and the economic activities of international organizations are considered.

Preparation: Ec 5, Ec 6

4 class hours

Ec 15 History of Economic Thought

A critical review of the origin and development of economic thought from the ancient world to modern times is the aim of this course, since familiarity with the efforts of great economic thinkers in the past is essential for the thorough understanding of modern economic theory. After briefly noting the contributions of Plato and Aristotle, the early Christian fathers, and the writers of the Middle Ages, each of the main schools of economic thought is taken up in turn: the Mercantilists, the Physiocrats, the Classical School, the Socialists, the Historical School, the Austrian School, and Alfred Marshall.

Preparation: Ec 5, Ec 6

3 class hours

Ec 16 Advanced Economic Theory

The course introduces the student to the more complex aspects of economic theory. Particular consideration is given to the major modern theoretical problems.

Preparation: Ec 15

3 class hours

Government

Gv 1 American Government

The study of our National Government with respect to its organization and function; its powers and limitations under the Constitution; its legislative, administrative and judicial machinery under the party system of government and bureaucracy.

3 class hours

Gv 2 American Government

A more careful study of the relationships of our federal, state, and municipal governments, including an analysis and comparison of the various state governments and types of municipal government with respect to state and local agencies for carrying out the executive, legislative and judicial functions of government in a democratic country.

3 class hours

Gv 3 Comparative Government

The older governments of Europe, those principally of Great Britain and France, but also of Switzerland and the Scandinavian countries, are described and analyzed in this course. Institutions are compared in these various states with reference to America and the newer governments of Europe.

3 class hours

Gv 4 Comparative Government

A study of the newer governments of Europe, as found in Germany, Italy, and the Soviet Union. Democracy and dictatorship are analyzed as different modes of life and rule. The states are compared to each other, to the older governments of Europe, and to the United States.

3 class hours

Gv 5-B Constitutional Law

A careful study of the leading constitutional principles of the American government as developed through judicial interpretation. Primary emphasis is placed upon the relation of constitutional law to present-day problems, with particular reference to such items as "due process of law" and "interstate commerce."

4 class hours

Gv 7 Origins of Political Theory

A survey of political philosophy from Plato and Aristotle to Bentham. The nature, origin, forms, and ends of the state and government are covered.

3 class hours

Gv 8 Modern Political Theory

A critical study is made of the major developments in political theory since Bentham, with special reference to the influence of these developments upon American politics and political institutions. Attention is paid to the modern conflict between the democratic and the totalitarian conceptions of the state.

3 class hours

History

H 1 History of Civilization

This is primarily a background course. Introductory lectures deal with primitive society, the development of language and writing, and the early contributions of Egypt and Asia. More detail is given to the structure of Greek and Roman Society, the rise of the Christian Church, the barbarian invasions of the Empire, the growth of Islam, and the life of the early Middle Ages.

4 class hours

H 2 History of Civilization

This course deals with the growth of the monarchies in Europe, the medieval Church, the art and literature of the Renaissance and Reformation, the economic revolution, the Age of Reason in France and England, the Old Regime and the Revolution in France, and the growth of science and industrialism.

4 class hours

H 9 The United States to 1865

This course is an interpretation of the events which shaped the American nation to the Civil War. Social customs, economic influences, racial contributions, and humanitarian movements are not neglected even though the political history is stressed.

3 class hours

H 10 The United States Since 1865

Major attention is given to the social, economic, and political foundations of recent history in this survey of the transition of America from an agricultural to an urban industrialized society since the Civil War. Consideration is given to the problems arising with the emergence of America as a world power.

3 class hours

Psychology

Ps 1-B Psychology

An elementary survey of the psychology of individual differences including personality differences, together with a presentation of some of the practical applications of the findings of differential psychology.

3 class hours

Ps 2-B Psychology

An introduction to general experimental psychology. The topics considered include learning, thought, memory, perception, and sensation.

3 class hours

Spanish

Sp 1 Elementary Spanish

A beginner's course stressing the essentials of grammar, practice in pronunciation, and progressive acquisition of basic vocabulary and current idiomatic expressions.

4 class hours

Sp 2 Elementary Spanish

A continuation of Sp 1. Most of the time is devoted to the reading of simple texts, with oral practice based on the material read.

Preparation: Sp 1

4 class hours

Sp 3 Intermediate Spanish

In this course several texts of average difficulty are read and studied. The work includes a thorough review of grammar, oral practice, based on the reading matter, memorizing of selected passages, dictation, study of idioms, vocabulary building, and outside reading.

Preparation: Sp 2

4 class hours

Sp 4 Intermediate Spanish

A continuation of Sp 3, with an increasing amount of both class and outside reading.

Preparation: Sp 3

4 class hours

Sociology

S 1 Introduction to Sociology

In presenting a survey of the origins and sources of human society, this study provides orientation for the course in principles and problems which follows. The several theories of organic evolution are discussed. The antiquity of man and basic anthropological data are considered. The racial and ethnic groupings of man are then studied in the light of biological, geographical, and cultural factors.

3 class hours

S 2 Principles of Sociology

Facts and principles basic to a general knowledge of the field of sociology are presented. The origins, forms, and forces of human associations are discussed. A study is made of the principal sociopolitical groups such as socialism, communism, fascism, and democracy. The course is practical in emphasis and is designed to meet the needs of the student who desires a survey of the subject.

3 class hours

S 3 Social Problems

Attention is given the nature, complex causation, and inter-relatedness of social problems in general. Cultural change, with its attendant lags, as well as other social forces and conflicts are studied. While sociological theory is occasionally introduced to clarify the problem at hand, the course is essentially practical in character. Such problems as poverty and unemployment, race antagonisms, population pressures, and the broken home are considered. Optional field trips to various institutions give concreteness to the problems studied.

Preparation: S 1, S 2

3 class hours

S 4 Social Pathology

Similar to the course in Social Problems in background and approach, this study deals with the maladjustments and ills of human society. Emphasis is given those pathological conditions which exist in relations between the individual and the group.

Typical subjects presented include mental defectiveness and disease, alcoholism and drug addiction, suicide, delinquency and crime, and pathologies of domestic relations. The field trips arranged for this course add to the practical knowledge of the social ills which are studied.

Preparation: S 1, S 2

3 class hours

Other Courses

PE 1 Hygiene

One class hour a week is devoted to the study of information closely related to the physical training work and to personal and mental hygiene. For each class lecture the student is assigned at least one hour of outside study based on the required textbook. The course includes enough of the fundamentals of physiology and anatomy to enable the student to understand such parts of the course as require some knowledge of these subjects.

1 class hour

U 4 Business Policy

This course is set up as a seminar in which the members of the class will examine the problems that the business executives face daily in their relations with government, labor, the market, and the community. The ethical features of business policy formation will be stressed along with the social implications. An attempt will be made to determine the criteria by which fair business practices can be distinguished from unfair.

4 class hours

Orientation

This course, required of all first year students, is designed to make entering students explicitly aware of those facts, principles, and techniques which are significantly related to the maintenance of their intellectual efficiency, to assist them in making desirable social adjustments in the college community, to help them make a wise choice in their upperclass field of specialization. Special effort is made to prepare the student to make an early and satisfactory adjustment to the conditions of the co-operative work. Lectures and individual conferences.

1 class hour

Physical Training

All first year students are required to take physical training. Health, strength, and vitality do not come by chance, but by constant attention to those factors involved in their development. It is very essential for the student to acquire good habits of life.

The work in the course includes a formal calisthenic program, special exercise classes for the correction of postural defects, participation in the regular athletic program, including baseball, basketball, hockey, track, and many types of informal games. All members of the class are also required to learn to swim.

Students wishing to be excused from physical training, because of physical defects, are required to present a petition to the faculty supported by a physician's certificate.

2 class hours

Business Administration Theses

A thesis in the College of Business Administration is considered to be an essay involving the statement, analysis, and solution of some problem in a special field of business administration. Its purpose is to demonstrate a satisfactory degree of initiative and power of original thought and work on the part of the candidate. A mere resume of existing knowledge in some subject is not acceptable. This, it is true, must usually be made, but in addition thereto the student must show his ability to deal constructively with the data he has collected and his power to draw significant and reliable conclusions from his investigations. The completed thesis will be examined for acceptance or rejection from the technical viewpoint by the departments interested and then forwarded to the Secretary of the Faculty. Final approval of the thesis rests with the Dean. When it is accepted, the thesis becomes the property of the school and it is not to be printed, published, nor in any other way made public except in such manner as the department and the Dean shall jointly approve.

Theses are not required of seniors in the College of Business Administration. To certain students who wish to do so, however, the privilege of writing a thesis may be granted by the Dean in accordance with the following regulations:

1. To be eligible to write a thesis a student must have attained a scholastic average of at least 2.0 or better during the middler year and the first half of the junior year.
2. Students who have met this minimum requirement may petition the Dean for the privilege of substituting a thesis for any one of the required courses of the fifth year.
3. In his petition the student must state the subject which is to be investigated and give a brief statement of the purpose and scope of the proposed thesis.
4. Petitions for the privilege of writing theses must be submitted in writing to the Dean not later than the middle of the second college period of the junior year.

NORTHEASTERN UNIVERSITY

C O L L E G E O F

Engineering

Admission Requirements and Courses of Study

1944-1946



(CO-EDUCATIONAL)

BOSTON 15, MASSACHUSETTS

July, 1944

THE COLLEGE OF ENGINEERING

Aims and Methods

ENGINEERING has been defined as the art of applying the resources of material and power in nature to the use and convenience of man. The design and construction of bridges, power plants, water works, skyscrapers, industrial plants, machinery, transportation systems, and communications systems thus clearly fall within the scope of engineering. And as scientific research has advanced into new areas, the task of putting these discoveries to practical use has also fallen to the engineer.

Because an engineering education teaches the student to search out the truth, to think clearly, and to formulate conclusions based upon a solid foundation of facts, engineers are being called more and more to occupy positions of responsibility in the management of our great industrial enterprises. Even in such diverse fields as banking, public health, and public administration, this so-called engineering approach is in demand.

In consequence of this extremely wide field of endeavor open to engineers, the problem of providing a technical training adequate to cope with the design and construction of buildings, machinery, and equipment, and at the same time a training broad enough to develop a well-rounded personality and a sense of social responsibility, is by no means simple of solution. Northeastern University seeks, by means of its educational program, first of all to develop students of well-rounded personality capable of meeting and discharging their responsibilities as future citizens and leaders in their own communities. At the same time, the courses of study prescribed for students in the College of Engineering are designed to develop engineers technically competent to undertake professional responsibilities in their chosen fields of endeavor.

To this end, the College of Engineering offers separate curricula in five major branches of engineering: namely, civil, mechanical, electrical, chemical, and industrial. Since a basic training in science and mathematics is essential to all fields of engineering, the first year's curriculum is identical for all engineering students, and it is possible for any of them to change their field of specialization at the end of the first year without loss of time. Students are required to take a number of courses of a cultural nature designed to broaden their point of view and to help develop a well-balanced outlook. Individual laboratory instruction in addition to classroom work is employed as far as possible, and the Co-operative Plan of education, enabling the students to obtain a first-hand acquaintance with actual industrial and engineering operations, goes a long way toward bridging the gap between "theory" and "practice."

Admission Requirements

Applicants for admission to the freshman class must qualify by one of the following methods:

1. Graduation from an approved course of study in an accredited secondary school, including prescribed subjects listed below.

2. Completion of fifteen acceptable secondary school units with a degree of proficiency satisfactory to the Department of Admissions.

3. Examinations.

(Certificate of entrance examinations passed for admission to recognized colleges and technical schools may be accepted.)

Prescribed Subjects for Admission

College of Engineering

Algebra (quadratics and beyond)	2 units
Plane Geometry	1 unit
*Physics or Chemistry	1 unit
History, Social Studies and/or Foreign Language	2 units
English (4 years)	3 units
**Electives	6 units
	—
Total	15 units

A unit is a credit given to an acceptable secondary school course which meets at least four times a week for periods of not less than forty minutes each throughout the school year.

Entrance examinations are not required of students whose transcripts of record are acceptable, but the Committee on Admissions reserves the right to require a candidate to be present for an examination in any subjects that it may deem necessary because of some weakness in the secondary school record.

Other Requirements

These formal requirements are necessary and desirable in that they tend to provide all entering students with a common ground upon which the first year of the college curriculum can be based. But academic credits alone are not an adequate indication of a student's ability to profit by a college education. Consequently, the Department of Admissions takes into consideration, along with the formal requirements stated above, many other factors

*Physics is recommended.

**Not less than four of the "electives" must be in one or more of the following academic branches: Languages, Natural Science, Mathematics, Social Sciences, History.

regarding candidates for the freshman class. The Committee considers a student's interests and aptitudes in so far as these can be determined, capacity for hard work, attitude toward classmates and teachers in high school, physical stamina, and most important of all—character. In this way the University seeks to select for its student body those who not only meet the academic admission requirements but who also give promise of acquitting themselves creditably in the rigorous program of training afforded by the Co-operative Plan and of later becoming useful members of society.

Personal Interview

Candidates for admission should communicate with the Director of Admissions, who will advise them frankly on the basis of past experience. A personal interview is always preferred to correspondence, and parents are urged to accompany the applicant whenever this is possible. Effective guidance depends in large measure upon a complete knowledge of a candidate's background and problems. Parents invariably are able to contribute much information that aids the admissions officer in arriving at a decision.

Candidates are urged to visit the Office of Admissions for personal interview if it is possible for them to do so before submitting their applications. Office hours of the Department are from 9:00 A.M. to 4:00 P.M. daily; Saturdays to 12:00 M. The Director of Admissions will interview applicants on Wednesday evenings but by appointment only.

Application for Admission

Each applicant for admission is required to fill out an application blank stating previous education as well as the names of persons to whom reference may be made.

An application fee of five dollars (\$5.00) is required when the application is filed. This fee is non-returnable.

The last page of this catalog is in the form of an application blank. It should be filled out in ink and forwarded with the required five dollar fee to Director of Admissions, Northeastern University, Boston, Mass. Checks should be made out to Northeastern University.

Upon receipt of the application, properly filled out, the college at once looks up the applicant's references and secondary school records. When replies have been received to the various inquiries, the applicant is informed as to eligibility for admission.

An application should be filed at least a month prior to the date of registration.

The University reserves the right to place any entering student upon an indefinite trial period. Reclassification will be determined upon the academic success of the student.

Registration

Eligibility for admission does not constitute registration. Freshmen will register at the University on Sept. 25, 1944, March 12, 1945, June 11, 1945, Sept. 10, 1945. Students are not considered to have met the requirements for admission until they have successfully passed the required physical examination.

Advanced Standing

Students transferring from approved colleges will be admitted to advanced standing provided their records warrant it. Whenever a student enters with advanced standing and later proves to have had inadequate preparation in any of his prerequisite subjects, the faculty reserves the right to require the student to make up such deficiencies.

Applicants seeking advanced standing should arrange to have transcripts of their previous college records forwarded with their initial inquiry. Students admitted to advanced standing are not eligible for placement at co-operative work until they have completed a full year of academic work at the University.

Entrance Examinations

Students who are deficient in required units for admission may remove these deficiencies by examination. Such examinations are held at the University unless special arrangements are made with the Department of Admissions to administer them elsewhere.

Students are advised to take such examinations on the earliest possible date in order that any deficiencies which they fail to clear may be made up in time to permit registration with the desired class and division.

The time of examinations is as follows:

10:00 A.M. to 12:00 M.
1:00 P.M. to 3:00 P.M.

During the current year examinations will be given approximately three weeks before each registration date.

Graduation Requirements

The College of Engineering offers five-year curricula, conducted on the Co-operative Plan, leading to the following degrees:

- I. Bachelor of Science in Civil Engineering
- II. Bachelor of Science in Mechanical Engineering*
- III. Bachelor of Science in Electrical Engineering
- IV. Bachelor of Science in Chemical Engineering
- V. Bachelor of Science in Industrial Engineering

These curricula are described in the following pages. Since the first year is the same for all engineering students, final choice of curriculum need not be made until the beginning of the second year.

Candidates for the Bachelor of Science degree must complete all of the prescribed work of the curriculum in which they seek to qualify. A minimum of 147 semester hours is required for the degree. Students who undertake co-operative work assignments must meet the requirements of the Department of Co-operative Work before they become eligible for their degrees.

No student transferring from another college or university is eligible to receive the S.B. degree until he has completed at least one academic year at Northeastern immediately preceding his graduation.

Students who fail to show a satisfactory standard of general efficiency in their professional fields may be required to demonstrate their qualifications for the degree by taking such additional work as the faculty may prescribe. If they are clearly unable to meet the accepted standard of attainment, they may be required to withdraw from the University.

Graduation With Honor

Candidates who have achieved distinctly superior attainment in their academic work will be graduated with honor. Upon special vote of the faculty a limited number of this group may be graduated with high honor or with highest honor. Students must have been in attendance at the University at least three years before they may become eligible for honors at graduation.

Thesis Option

Theses are not required of candidates for the degree of Bachelor of Science. Students who show special aptitude for thesis work, however, may be permitted to substitute an appropriate thesis for equivalent work in class. The nature of thesis work is described on page 230.

*Includes option in Aeronautical Engineering.

Engineering Curricula

I. Civil Engineering

The field of civil engineering has to do with the planning and building of all kinds of structures and public works. None of the structures of civil engineers lend themselves to quantity production in a factory. Not only are civil engineering works designed to fit a single location, but ordinarily their value is dependent upon their ability to resist forces tending to move them.

Civil engineering is as old as civilization itself and, until recent times, it embraced all phases of engineering except those of a military character. Today its major branches include topographical, municipal, railroad, highway, structural, hydraulic, and sanitary engineering. It covers land surveying, the building of railroads, soil mechanics, harbors, docks, and similar structures, the construction of sewers, water works, streets, and highways, the design and construction of flood control projects, bridges, buildings, walls, foundations, and all fixed structures.

Because civil engineering covers such a broad field, it is not possible to become expert in all its branches. All of these, however, rest upon a relatively compact body of principles and, broadly speaking, it may be said that the civil engineer deals largely with accurate descriptions of locations (surveys) and with applications of the mechanics of resistance to motion (statics).

Since the first step in every civil engineering project involves accurate measurement of the surface features of the land, of the nature of the soil, and of the character of the underlying rock, the study of surveying and related subjects occupies a large place in the civil engineering curriculum. And since the primary consideration in designing any structure is to make certain that it will withstand safely any forces to which it may be subjected, the mechanics of static bodies, strength of materials, and theory of structures are studied in detail. The curriculum is thus intended to prepare the young civil engineer to take up the work of design and construction of structures, to solve the problems of water supply and waste disposal in urban areas, and to undertake intelligently the supervision of work in allied fields of engineering and in general contracting.

Upon graduation, the young engineer may expect a period of apprenticeship either in the field, surveying and plotting, or in the office, over the drafting board. As experience is gained, the graduate is entrusted with greater responsibilities in actual design and supervision of construction. Those who prefer a roving existence should direct their ambitions toward private fields, while those who prefer a stable home and community life will seek opportunities in the public service of the Federal Government and the various states and municipalities.

I. Civil Engineering

FIRST TERM			SECOND TERM		
Course No.	Course	Class Hours	Course No.	Course	Class Hours
<i>First Year</i>					
Ch 1	General Chemistry...	3 (3)	Ch 2	General Chemistry...	3 (3)
D 1	Eng. Drawing.....	6	D 2	Descriptive Geometry..	6
E 1	English I.....	3	E 2	English I.....	3
M 1	Algebra.....	3	M 4	Analytic Geometry...	5
M 3	Trigonometry.....	2	P 2	Physics I.....	3
P 1	Physics I.....	3		Orientation.....	1
PE 1	Hygiene.....	1		Physical Training.....	2
	Physical Training....	2			
		26			26
<i>Second Year</i>					
CI 3	Surveying I.....	3	CI 4	Surveying II.....	4
CI 5	Surveying I, F & P... 0 (5)		CI 6	Surveying II, F & P... 0 (5)	
M 5	Differential Calculus..	4	M 6	Integral Calculus.....	4
P 3	Physics II.....	3	P 4	Physics II.....	3
P 5	Physics Laboratory... 0 (2)		P 6	Physics Laboratory... 0 (2)	
EL 5	Electrical Machinery..	4 (4)	ME 20	Applied Mechanics...	4
		25			22
<i>Third Year</i>					
CI 7	Surveying III.....	3	CI 8	Surveying IV.....	3
CI 9	Surveying III, F & P... 0 (5)		CI 10	Surveying IV, F & P... 0 (5)	
CI 11	Hydraulics.....	4	CI 12	Hydraulics.....	3
Ec 21	Economics.....	3	Ec 22	Economics.....	3
ME 21	Applied Mechanics... 4		ME 22	Strength of Materials.. 4	
ME 35	Heat Engineering..... 3		ME 36	Heat Engineering..... 2 (3)	
		22			23
<i>Fourth Year</i>					
CI 15	Theory of Structures.. 4		CI 16	Theory of Structures.. 4	
CI 21	Sanitary Engineering.. 3		CI 22	Sanitary Engineering.. 3	
Gy 1	Geology.....	3	Gy 2	Geology.....	3
ME 23	Strength of Materials.. 3		ME 24	Advanced Mechanics.. 3	
ME 69	Testing Materials Lab. 1 (3)		CI 18	Concrete Testing Lab.. 1 (3)	
S 1	Sociology.....	3	S 2	Sociology.....	3
		20			20
<i>Fifth Year</i>					
C 7	Engineering Conference 2		C 8	Engineering Conference 2	
CI 23	Engineering Structures 4		CI 24	Engineering Structures 4	
CI 25	Concrete.....	4	CI 26	Concrete.....	4
CI 29	Design of Structures... 2 (9)		CI 30	Design of Structures... 2 (9)	
CI 31	Highway Engineering.. 3		CI 32	Highway Engineering.. 3	
IN 5	Indus. Management I.. 3		IN 6	Indus. Management II 3	
		27			27

II. *Mechanical Engineering*

The field of mechanical engineering is concerned with the harnessing of our power resources by means of machinery to perform useful work. With the increasing mechanization of all industry which has taken place during the last century, the field has so broadened as to include all lines of industry.

In contrast to the civil engineer who deals primarily with static forces, the mechanical engineer is more concerned with the mechanics of motion or kinetics. And because moving parts require constant care and adjustment, the mechanical engineer has the task not only of designing and installing complicated machinery but also of operating it efficiently after it has been installed.

Among the major branches of mechanical engineering are included combustion or power production engineering, machine and machine-tool design, railway mechanical engineering, automotive engineering, aeronautical engineering, refrigerating engineering, and air conditioning engineering. The construction and operation of furnaces, boilers, and engines, the design of all kinds of machinery from pocket watches to steel mills, the construction and operation of railway and other transportation equipment including automobiles and airplanes, and even control of atmospheric conditions by means of heating, ventilating, and refrigerating equipment, all fall in this field.

Since machinery is so predominantly the concern of the mechanical engineer, the program of study is designed to give the student considerable training in the principles underlying the design and operation of engines, power transmission devices, machine tools, and other machinery. This, of course, implies a thorough study of the physical laws concerning motion and transfer of energy. Applied mechanics and thermodynamics occupy a prominent place in the curriculum. The program of instruction thus gives the student a broad foundation in those fundamental subjects essential to all engineering practice and, in the senior year, provides opportunity for limited specialization by means of an option in aeronautics in addition to the general course.

For those students desiring to specialize in the field of industrial management, attention is called to the curriculum in industrial engineering, the basic training of which is essentially the same as that in mechanical engineering.

The graduate mechanical engineer generally finds employment in an industrial plant, either in design and research or in plant operation and maintenance. And if one's abilities lie in that direction, one frequently is entrusted after a time with greater and greater responsibility for the successful management of the enterprise.

II. Mechanical Engineering

FIRST TERM			SECOND TERM		
Course No.	Course	Class Hours	Course No.	Course	Class Hours
<i>First Year</i>					
Ch 1	General Chemistry...	3 (3)	Ch 2	General Chemistry...	3 (3)
D 1	Eng. Drawing.....	6	D 2	Descriptive Geometry...	6
E 1	English I.....	3	E 2	English I.....	3
M 1	Algebra.....	3			
M 3	Trigonometry.....	2	M 4	Analytic Geometry...	5
P 1	Physics I.....	3	P 2	Physics I.....	3
PE 1	Hygiene.....	1		Orientation.....	1
	Physical Training.....	2		Physical Training.....	2
		26			26
<i>Second Year</i>					
EL 5	Electrical Machinery..	4 (4)	D 4	Machine Drawing....	6
IN 3	Production Processes I..	4	IN 4	Production Processes II	4
M 5	Differential Calculus..	4	M 6	Integral Calculus.....	4
P 3	Physics II.....	3	P 4	Physics II.....	3
P 5	Physics Laboratory...	0 (2)	P 6	Physics Laboratory...	0 (2)
			ME 20	Applied Mechanics...	4
		21			23
<i>Third Year</i>					
CI 11	Hydraulics.....	4	CI 12	Hydraulics.....	3
Ec 21	Economics.....	3	Ec 22	Economics.....	3
ME 1	Mechanism.....	6	EL 6	Elec. Measurements... 3 (3)	
ME 21	Applied Mechanics...	4	ME 22	Strength of Materials..	4
ME 29	Heat Engineering.....	3	ME 30	Heat Engineering.....	4
		20			20
<i>Fourth Year</i>					
IN5	Industrial Management I..	3	IN6	Industrial Management II	3
ME 23	Strength of Materials..	3	ME 24	Advanced Mechanics..	3
ME 31	Heat Engineering.....	4	ME 32	Heat Engineering.....	4
ME 61	Mechanical Eng. Lab..	0 (4)	ME 62	Mechanical Eng. Lab..	0 (4)
ME 27	Metallography.....	3	{	ME 42 Heating and Air Cond.	
				or ME 40 Aerodynamics..	3
S 1	Sociology.....	3	S 2	Sociology.....	3
		20			20
<i>Fifth Year</i>					
C 7	Engineering Conference	2	C 8	Engineering Conference	2
ME 51	Machine Design.....	6	IN 22	Contracts.....	3
ME 63	Mech Eng. Lab.....	1 (3)	ME 52	Machine Design.....	6
	Professional Electives	7	ME 44	Power Plant Eng.....	4
				Professional Electives	6
		19			21
<i>Electives:</i>			<i>Electives:</i>		
ME 33	Refrigeration.....	3	ME 16	Industrial Plants.....	6
ME 73	Aircraft Structures...	3	ME 34	Steam Turbines.....	3
ME 39	Engine Dynamics.....	4	ME 74	Aircraft Structures...	3
			ME 76	Aircraft Engine Design	6

III. *Electrical Engineering*

Electrical engineering is still comparatively new; it was barely two generations ago that Thomas Edison built the first central electric power station in New York City, and it was only a generation ago that the radio made its first appearance. In consequence, we find this branch of engineering more closely related to research in pure science than are the older branches of civil and mechanical engineering. Moreover, the tremendous developments of the past decade in theoretical physics have been largely in areas closely related to electrical engineering so that today greater opportunities for intellectual pioneering appear to exist in this field of engineering than in other branches of the profession.

The electrical industry and the field of electrical engineering are usually divided into two main branches, one having to do with electrical power and the other, communications. The power group deals principally with large equipment and apparatus employing heavy currents; the communications group handles smaller more delicate equipment employing small or even minute currents. Electrical engineering thus embraces the generation, transmission, and distribution of electricity for light and power purposes, the operation of electric railways, the design, construction, and operation of all types of electrical equipment including telephone, telegraph, and radio apparatus as well as lamps, motors, and household appliances. In addition, the field of illuminating engineering, having to do with the problems of proper light intensities, has in recent years assumed increasing importance.

Since electricity is without material embodiment and can be treated only by mathematical reasoning, the electrical engineer is frequently required to go into higher mathematics seldom used in other fields. It is also absolutely essential that the electrical engineer who hopes to make a success of his work be able to grasp readily and absorb effectively the meaning and content of the many scientific papers having to do with research in this field. For these reasons, the program of study in electrical engineering includes more work in the pure sciences of mathematics and physics than do the other courses, as well as a solid grounding in engineering fundamentals. This is followed by a thorough study of electrical theory and its applications in the power, high voltage, and electronics fields.

The profession of electrical engineering affords a wide diversification of employment opportunities. If one is research-minded, opportunity to develop one's talents may be found in the great laboratories; if one is more interested in plant problems, opportunity can be found in the manufacturing or operating organizations; and if one is sales-minded there are many splendid opportunities to be found in the field of sales engineering.

III. Electrical Engineering

FIRST TERM			SECOND TERM		
Course No.	Course	Class Hours	Course No.	Course	Class Hours
<i>First Year</i>					
Ch 1	General Chemistry...	3 (3)	Ch 2	General Chemistry...	3 (3)
D 1	Eng. Drawing.....	6	D 2	Descriptive Geometry.	6
E 1	English I.....	3	E 2	English I.....	3
M 1	Algebra.....	3			
M 3	Trigonometry.....	2	M 4	Analytic Geometry...	5
P 1	Physics I.....	3	P 2	Physics I.....	3
PE 1	Hygiene.....	1		Orientation.....	1
	Physical Training....	2		Physical Training....	2
		26			26
<i>Second Year</i>					
EL 1	Electrical Eng. I.....	3	EL 2	Electrical Eng. I.....	3
IN 3	Production Processes I	4	IN 4	Production Processes II	4
M 5	Differential Calculus..	4	M 6	Integral Calculus.....	4
P 3	Physics II.....	3	P 4	Physics II.....	3
P 7	Physics Laboratory...	0 (2)	P 8	Physics Laboratory...	0 (2)
D 3	Machine Drawing....	6	ME 20	Applied Mechanics...	4
		22			20
<i>Third Year</i>					
Ec 21	Economics.....	3	Ec 22	Economics.....	3
EL 9	Electrical Eng. II.....	3	EL 10	Electrical Eng. II.....	3
EL 11	Electrical Eng. Lab....	0 (3)	EL 12	Electrical Eng. Lab....	0 (3)
EL 13	Elec. Measurements I..	4	EL 14	Elec. Measurements II..	3
ME 21	Applied Mechanics....	4	ME 22	Strength of Materials..	4
CI 11	Hydraulics.....	4	M 7	Differential Equations.	4
		21			20
<i>Fourth Year</i>					
EL 17	Electrical Eng. III.....	3	EL 18	Electrical Eng. III.....	3
EL 19	Electrical Testing Lab..	2 (3)	EL 20	Electronics Lab. I....	1 (3)
EL 21	Electronics.....	2	EL 22	Electronics.....	4
EL 23	Electrical Meas. Lab..	0 (3)	EL 24	Adv. Elec. Meas. Lab..	0 (3)
ME 25	Strength of Materials..	2			
ME 35	Heat Engineering.....	3	ME 36	Heat Engineering.....	2 (3)
S 1	Sociology.....	3	S 2	Sociology.....	3
		21			22
<i>Fifth Year</i>					
C 7	Engineering Conference	2	C 8	Engineering Conference	2
EL 25	Electrical Eng. IV....	4	EL 26	Electrical Eng. IV....	4
EL 27	Adv. Elec. Eng. Lab....	2 (3)	EL 28	Adv. Electronics Lab..	1 (3)
EL 29	Electrical Eng. V-A....	3	EL 30	Electrical Eng. V-A....	3
EL 31	Elec. Eng. V-B.....	3	EL 32	Electrical Eng. V-B....	3
EL 35	Ultra H. F. Technique	4	EL 36	Ultra H. F. Technique	4
EL 37	Electronics Lab. II....	1 (3)	EL 38	Ultra H. F. Tech. Lab.	1 (3)
		25			24

IV. *Chemical Engineering*

The field of chemical engineering is relatively new. It has grown out of the discoveries of the chemical laboratories which have served as a foundation for a great many new industries whose production processes involve chemical as well as physical changes. Petroleum refining, coal carbonization, manufacture of rayon and cellophane, and hundreds of other industries require men and women trained in chemistry as well as in engineering. Many older industries such as foods, textiles, and leather are also employing chemical engineers.

The chemical engineer has been defined as a "professional man experienced in the design, construction, and operation of plants in which materials undergo chemical and physical change." It is the duty of the chemical engineer to cut the costs, increase production, and improve the quality of the products in the industry.

The chemical engineer must possess a working knowledge of the fundamental sciences and must understand and know how to work with people. In addition it is necessary that the chemical engineer recognize clearly the "correct appraisalment of values and costs" and possess a knowledge of the ability to apply the knowledge possessed to the development and operation of chemical processes and plants.

In addition to the fundamental courses in chemistry, mathematics, and physics required of all engineering students, a considerable amount of time is devoted to more advanced work in chemistry as a foundation for the study of chemical technology. Instruction in the elements of mechanical and electrical engineering also gives the student a fairly broad engineering background upon which to base his study of chemical engineering unit operations. Courses of a more liberal nature are included in the curriculum in order that the student may broaden his educational background. Since the field of chemical engineering is so varied, the curriculum has been designed to give the students a broad training rather than a specialized training in one specific industry. It is believed that this training will enable the students readily to acclimatethemselves to whatever industry they may choose to enter.

Because of the complex nature of many chemical processes and because of the difficulty of translating laboratory results into full-scale plant operations, there has developed in many chemical plants the so-called semi-works or pilot plant. Here new processes developed by the chemists in the research laboratory are put to the test of actual plant conditions on a small scale. And it is here that the young chemical engineers often find themselves upon graduation. If they are able to understand the chemist on the one side and the plant operator on the other, and if they are technically competent as well, they will soon find opportunity for advancement either in one of the technical branches of the industry, such as design, development, research, and production, or in the sales and management fields in which chemical engineering is essential.

IV. Chemical Engineering

FIRST TERM			SECOND TERM		
Course No.	Course	Class Hours	Course No.	Course	Class Hours
<i>First Year</i>					
Ch 1	General Chemistry...	3 (3)	Ch 2	General Chemistry...	3 (3)
D 1	Eng. Drawing.....	6	D 2	Descriptive Geometry.	6
E 1	English I.....	3	E 2	English I.....	3
M 1	Algebra.....	3			
M 3	Trigonometry.....	2	M 4	Analytic Geometry...	5
P 1	Physics I.....	3	P 2	Physics I.....	3
PE 1	Hygiene.....	1		Orientation.....	1
	Physical Training....	2		Physical Training....	2
		<u>26</u>			<u>26</u>
<i>Second Year</i>					
Ch 9	Qualitative Analysis..	4	Ch 12	Quant. Analysis.....	3
Ch 11	Qual. Analysis Lab....	0 (10)	Ch 14	Quant. Analysis Lab..	0 (7)
Ch 51	Sources of Information	1	ME 20	Applied Mechanics...	4
M 5	Differential Calculus..	4	M 6	Integral Calculus.....	4
P 3	Physics II.....	3	P 4	Physics II.....	3
P 5	Physics Laboratory...	0 (2)	P 6	Physics Laboratory...	0 (2)
		<u>24</u>			<u>23</u>
<i>Third Year</i>					
Ch 13	Quantitative Analysis.	3	Ch 40	Physical Chemistry...	3 (2)
Ch 17	Quant. Analysis Lab..	0 (5)	ChE 2	Ind. Stoichiometry...	3
ChE 1	Flow of Fluids.....	3	Ec 22	Economics.....	3
Ec 21	Economics.....	3	ME22	Strength of Materials..	4
ME 21	Applied Mechanics...	4	ME 30	Heat Engineering....	4
M 7	Differential Equations.	4			
		<u>22</u>			<u>19</u>
<i>Fourth Year</i>					
Ch 31	Organic Chemistry...	3	Ch 32	Organic Chemistry...	3
Ch 33	Organic Chem. Lab...	0 (5)	Ch 34	Organic Chem. Lab...	0 (5)
Ch 45	Physical Chemistry...	4 (2)	Ch 46	Physical Chemistry...	4 (2)
ChE 3	Unit Operations.....	4	ChE 4	Unit Operations.....	4
ChE 5	Unit Operations Lab..	0 (4)	ChE 6	Unit Operations Lab..	0 (4)
S 1	Sociology.....	3	S 2	Sociology.....	3
		<u>25</u>			<u>25</u>
<i>Fifth Year</i>					
C 7	Engineering Conference	2	C 8	Engineering Conference	2
Ch 35	Org. Chemistry.....	3			
Ch 39	Org. Chem. Lab.....	0 (5)	ChE 8	Organic Chem. Tech..	3
ChE 7	Inorganic Chem. Tech.	3	ChE 10	Chemical Eng. Projects	1 (6)
ChE 9	Chemical Proc. Lab...	1 (6)	ChE 12	Engineering Materials.	3
ChE 11	Chem. Eng. Thermodynamics.....	3			
IN 27	Indus. Management...	3	EL 5	Elec. Machinery.....	4 (4)
		<u>26</u>			<u>23</u>

v. Industrial Engineering

With the growth of large corporations the problems of direction, supervision, and co-ordination of the various parts of a given enterprise have demanded more competent and better trained managers. About fifty years ago, Frederick W. Taylor undertook to apply to the problems of industrial management what we now call "the scientific method" or "the engineering approach." He reasoned that it was management's business to know what constituted a proper day's work and that the way to get the facts was through research and experiment on a scientific basis. He defined "scientific management" not as any device or scheme or gadget, but as a new outlook — a new viewpoint based upon a solid foundation of fact. The methods employed by Taylor and by those who came after him have undergone considerable modification, but the concept of scientific management which he formulated has gained wider and wider recognition during the intervening years from both employers and employees.

This growing recognition of the value of a scientific approach to the problems of industrial management early created a demand for men and women trained in engineering and science, who possessed a knowledge of business as well, to assume positions of administrative responsibility in industry. To meet this demand, courses were established in many engineering colleges to provide a thorough training in engineering fundamentals together with a specialized training in business administration, which would prepare the students for managerial responsibilities in technical industries. These curricula are variously entitled industrial engineering, administrative engineering or engineering administration, but all are designed to lead ultimately to positions of administrative or executive responsibility, rather than to positions which involve highly specialized engineering responsibility.

The curriculum in industrial engineering, then, provides a course of study which is essentially the same as that for mechanical engineering in the first three years. In the last two years, however, many of the advanced engineering courses are replaced by courses in business management.

Upon graduation, many of the young industrial engineers may find their way into plant work perhaps in the methods department, some may prefer office work and enter the accounting department, while others may incline toward sales engineering work and after a period in the factory find themselves in the sales department.

There is also opportunity for the experienced industrial engineer in the consulting field. Upon becoming especially skilled in the technique of management, the consulting industrial engineer is called in by industry for advice upon the installation and maintenance of sound management principles and policies, and to assist in the reorganization of enterprises which have failed.

V. Industrial Engineering

FIRST TERM			SECOND TERM		
Course No.	Course	Class Hours	Course No.	Course	Class Hours
<i>First Year</i>					
Ch 1	General Chemistry...	3 (3)	Ch 2	Inorganic Chemistry..	3 (3)
D 1	Eng. Drawing.....	6	D 2	Descriptive Geometry..	6
E 1	English I.....	3	E 2	English I.....	3
M 1	Algebra.....	3			
M 3	Trigonometry.....	2	M 4	Analytic Geometry...	5
P 1	Physics I.....	3	P 2	Physics I.....	3
PE 1	Hygiene.....	1		Orientation.....	1
	Physical Training.....	2		Physical Training.....	2
		<u>26</u>			<u>26</u>
<i>Second Year</i>					
EL 5	Electrical Machinery..	4 (4)	D 4	Machine Drawing....	6
IN 3	Production Processes I	4	IN 4	Production Processes II	4
M 5	Differential Calculus..	4	M 6	Integral Calculus....	4
P 3	Physics II.....	3	P 4	Physics II.....	3
P 5	Physics Laboratory...	0 (2)	P 6	Physics Laboratory...	0 (2)
		<u>21</u>	ME 20	Applied Mechanics...	4
					<u>23</u>
<i>Third Year</i>					
CI 11	Hydraulics.....	4	CI 12	Hydraulics.....	3
Ec 21	Economics.....	3	Ec 22	Economics.....	3
ME 1	Mechanism.....	6	EL 6	Electrical Measurements	3 (3)
ME 21	Applied Mechanics...	4	ME 22	Strength of Materials	4
ME 27	Metallography.....	3	IN 28	Motion and Time Study	2 (3)
		<u>20</u>			<u>21</u>
<i>Fourth Year</i>					
IN 5	Indust. Management I	3	IN 6	Indust. Management II	3
IN 7	Industrial Accounting	1 (4)	IN 8	Industrial Accounting	1 (4)
IN 23	Statistics.....	2 (2)	IN 24	Statistics.....	2 (2)
ME 23	Strength of Materials..	3			
ME 35	Heat Engineering.....	3	ME 36	Heat Engineering.....	2 (3)
S 1	Sociology.....	3	S 2	Sociology.....	3
		<u>21</u>			<u>20</u>
<i>Fifth Year</i>					
C 7	Engineering Conference	2	C 8	Engineering Conference	2
IN 14	Industrial Finance....	3	IN 22	Contracts.....	3
IN 15	Sales Engineering....	3	IN 30	Tech. of Exec. Control	4
IN 17	Personnel Admin....	4	ME 16	Industrial Plants....	6
ME 69	Testing Mat. Lab....	1 (3)	ME 42	Heating and Air Cond.	3
	Elective.....	3		Elective.....	3
		<u>19</u>			<u>21</u>

Synopses of Courses of Instruction

On the pages which follow are given the synopses of courses offered in the several curricula of the college. Courses offered in the first semester bear odd numbers; those offered in the second semester bear even numbers.

The term prerequisite indicates a course that must be completed with a passing grade before a student will be permitted to register for the advanced course to which it applies. The term preparation indicates a course of such a preparatory nature that a student undertaking an advanced course, without having had the preparation course specified, will ordinarily find himself greatly handicapped, and may not register in the advanced course without the consent of the instructor.

Freshmen courses extend over a full semester of 16 weeks. Upperclass courses are uniformly 12 weeks in length each term. The University reserves the right to withdraw any course in which there is insufficient enrollment.

Co-ordination

C 7 Engineering Conference

This course is designed to bring about analytical thinking and systematic planning of the "after-graduation-employment" problem. It is conducted as an open discussion class by the Department of Co-operative Work. Each co-ordinator has in his class those students who have been placed and supervised on co-operative work by him. Each student analyzes and applies to himself as the "product" the fundamental principles of merchandising. Whenever practicable, prominent men who are leaders in the fields of employment counseling, business, or engineering present the employers' viewpoint. Thus the graduating seniors are brought face to face during the year with one of the most important and perplexing problems of life, namely, how to "sell their services," thereby aiming to bring a co-ordinated training of theory and practice to a logical conclusion.

2 class hours

C 8 Engineering Conference

This course is the sequel to C 7 and consists of the practical application of the techniques of job-getting which have been analyzed and discussed in that course. It is conducted on a conference rather than on a class basis, the major portion of the time being devoted to collection of employment prospects and to the planning and writing of letters to and securing interviews with prospective employers. It is intended that this course will culminate in the attainment by each student of his after-graduation job.

2 class hours

Chemistry

Ch 1 General Chemistry

The fundamental ideas of matter and energy; the properties of gases, liquids, and solids; molecular weights; equations, atomic structure, classification of the elements; ionic reactions; the chemistry of the non-metals, and radio activity are among the topics which are covered in the course. Two lectures, one recitation, and a three-hour laboratory period comprise the weekly schedule of instruction.

3 class hours, 3 lab. hours

Ch 2 General Chemistry

A continuation of Ch 1 General Chemistry. Modern ideas covering the theory of solutions of electrolytes are discussed together with experimental facts. The chemistry of the metals is covered thoroughly, and time is devoted to an introduction to organic chemistry. The latter part of the course is given to qualitative analysis with particular emphasis on the laboratory work. The plan of instruction is identical with that of Ch 1.

Preparation: Ch 1

3 class hours, 3 lab. hours

Ch 9 Qualitative Analysis

The object of this course is to give the student knowledge of the various fundamental qualitative laws and principles. A portion of the time is devoted to the formulation of numerical terms which are essential to the understanding of the mass action law, ionic equilibria, solubility product, hydrolysis, and redox constants. The use of the newer spot tests is stressed and where possible their reactions explained. Whenever necessary, lectures demonstrating the various semi-micro techniques are given, as well as those designed to illustrate more fundamental properties of solutions.

Prerequisite: Ch 1, Ch 2

4 class hours

Ch 11 Qualitative Analysis Laboratory

This course, which is carried out on a semi-micro scale, applies the material covered in Ch 9 to actual problems. After some preliminary experiments certain procedures are combined and the separations and identifications made on both known and unknown solutions. Finally these are combined into a complete, systematic scheme which is applied to artificially prepared mixtures and industrial materials. Careful manipulations, thoroughness in observation, and accuracy in arriving at conclusions are expected of each student.

Prerequisite: Ch 1, Ch 2

10 lab. hours

Must be taken concurrently: Ch 9

Ch 12 Quantitative Analysis

It is the purpose of this course to give to the student a realization of the scientific development of quantitative methods. Each of the major operations such as weighing, measurement of volumes, titration, filtration, ignition, and combustion is considered from the standpoint of the theoretical principles involved, and with due consideration of the manipulative technique necessary.

This is followed by the combination of these operations and their application to actual analysis, including a comprehensive study of volumetric methods and of the more elementary parts of gravimetric analysis.

As the correct calculation of analytical results is of no less importance than the actual procedures of analysis, a number of problems form a very important part of the course.

Prerequisite: Ch 1, Ch 2

3 class hours

Preparation: Ch 9

Must be taken concurrently: Ch 14

Ch 13 Quantitative Analysis

This course, a continuation of Ch 12, is similarly conducted. After consideration of the more advanced parts of gravimetric analysis and of systematic mineral procedures, the remainder of the course consists of a critical discussion of common technical methods, including the standard ones for the analysis of steel, non-ferrous alloys, fuels, oils, gas, water, fertilizers, and foods.

Prerequisite: Ch 1, Ch 2

3 class hours

Preparation: Ch 12

Must be taken concurrently: Ch 17

Ch 14 Quantitative Analysis Laboratory

This is a laboratory course intended to illustrate by actual use the various analytical methods considered in Ch 12. After certain preliminary experiments designed to acquaint the student with the apparatus used, volumetric analysis (including acidimetry and alkalimetry), oxidation, reduction, and precipitation methods are taken up. This is followed by simple gravimetric analysis.

Prerequisite: Ch 1, Ch 2

7 lab. hours

Preparation: Ch 11

Must be taken concurrently: Ch 12

Ch 17 Quantitative Analysis Laboratory

This course includes not only the usual illustrative gravimetric determinations but also electrolytic, electrometric, combustion, and optical methods. In the latter half of the course actual industrial methods are used so that, at its completion, the student should be able to perform satisfactorily any ordinary analysis.

Prerequisite: Ch 1, Ch 2

5 lab. hours

Preparation: Ch 14

Must be taken concurrently: Ch 13

Ch 31 Organic Chemistry

A study of the basic principles of the aliphatic organic compounds. The resemblance of classes is stressed and emphasis is placed on genetic charts. The industrial significance of the subject is discussed to show the practical nature of organic chemistry.

Prerequisite: Ch 1, Ch 2

3 class hours

Preparation: Ch 40

Must be taken concurrently: Ch 33

Ch 32 Organic Chemistry

A continuation of Ch 31 dealing with the preparation and characteristic reactions of the aromatic organic compounds. Special attention is given to polymerization, diazotization, dyes, and the use of catalyst, nitration, and sulphonation.

A few of the more important heterocyclic compounds are studied.

Preparation: Ch 31

3 class hours

Must be taken concurrently: Ch 34

Ch 33 Organic Chemistry Laboratory

Preparations and reactions designed to teach the laboratory technique involved in organic chemistry. The method of keeping notes on the work performed and reactions involved is stressed.

Prerequisite: Ch 1, Ch 2

5 lab. hours

Preparation: Ch 40

Must be taken concurrently: Ch 31

Ch 34 Organic Chemistry Laboratory

This is a continuation of Ch 33. The preparations in this course serve to acquaint the student with such types of chemical reactions as sulphonation, the Grignard reaction, the Perkins reaction, Skraup's synthesis, the Friedal-Crafts reaction, and the preparation of dyes.

In addition to the manipulation techniques taught in Ch 33, this course introduces the use of vacuum distillations, fractional crystallization, and separations by physical and chemical means.

Preparation: Ch 33

5 lab. hours

Must be taken concurrently: Ch 32

Ch 35 Organic Chemistry

A continuation of Ch 32 and includes a study of the preparation and reactions of heterocyclic and alicyclic compounds.

Preparation: Ch 32

3 class hours

Must be taken concurrently: Ch 39

Ch 39 Organic Chemistry Laboratory

The purpose of this course is to familiarize the student with the chemical and physical tests used in qualitative organic analysis. A series of experiments, based on the classification of reactions of organic compounds, serves as a basis for the examination of simple liquid and simple solid compounds and the preparation of suitable derivatives of them.

Preparation: Ch 34

5 lab. hours

Must be taken concurrently: Ch 35

Ch 40 Physical Chemistry

This course begins with a short resume of the field of physical chemistry, and its relationship to the other courses in chemistry and chemical engineering. Following this, atomic and molecular weights, and the properties of gases, liquids, solids, ionized, non-ionized, and colloidal solutions are taken up.

Prerequisite: Ch 12, Ch 14

3 class hours, 2 lab. hours

Preparation: Ch 13, Ch 17

Ch 45 Physical Chemistry

A continuation of Ch 40 including a consideration of the following topics: rates of reaction, homogeneous and heterogeneous equilibrium, and thermochemistry.

Prerequisite: Ch 13, Ch 17

4 class hours, 2 lab. hours

Preparation: Ch 40

Ch 46 Physical Chemistry

A continuation of Ch 45 including electrical conductance, electrolytic equilibrium, electrolysis, photochemistry and atomic structure.

Preparation: Ch 45

4 class hours, 2 lab. hours

Ch 51 Sources of Information

This course is intended to acquaint the chemical student with the constantly increasing volume of scientific literature pertaining to the field of chemistry.

After a brief outline of the entire field of scientific literature, and a description of various methods of library procedure, the various available sources of scientific information are investigated. A series of individual library problems, in which the student is required to apply the information obtained in the classroom, forms a very important part of the course.

Prerequisite: Ch 1, Ch 2

1 class hour

Chemical Engineering

ChE 1 Flow of Fluids

A study of methods of determining rates of flow and power consumption of fluids flowing through pipe lines. This course differs from the usual course in hydraulics chiefly in the amount of emphasis placed on the flow of gases and oils.

Preparation: P 1

3 class hours

ChE 2 Industrial Stoichiometry

This is essentially a problem course developed around the study of fuels and combustion. Special attention is given to principles underlying the methods of calculation which are of value to the chemical engineer.

Prerequisite: Ch 12

3 class hours

Preparation: Ch 13

ChE 3 Unit Operations

This course consists of a study of the mechanical operations peculiar to the chemical industry. Such unit operations as flow of heat, evaporation, and humidity control are considered. Many problems of a practical nature are solved during the course.

Prerequisite: ChE 1

4 class hours

Must be taken concurrently: ChE 5

ChE 4 Unit Operations

This is a continuation of ChE 3. The unit operations studied are drying, crushing, separation, filtration, distillation, and gas absorption.

Prerequisite: ChE 2

4 class hours

Preparation: ChE 3

Must be taken concurrently: ChE 6

ChE 5 Unit Operations Laboratory

This laboratory course is based on the unit operations studied in ChE 3. The squad system is used. Experiments are performed on small-scale plant equipment that has been specially designed or selected for the purpose. Detailed reports are required.

Must be taken concurrently: ChE 3

4 lab. hours

ChE 6 Unit Operations Laboratory

This is a continuation of ChE 5. Experiments are performed in the unit operations which are being studied simultaneously in ChE 6.

Must be taken concurrently: ChE 4

4 lab. hours

ChE 7 Inorganic Chemical Technology

A study of the processes and manufacturing methods used in the more important industries based on inorganic chemical technology. Existing material and economic relationships are emphasized. Plant inspection trips and problems pertaining to the industries studied are included.

Prerequisite: Ch 9

Preparation: ChE 2

3 class hours

ChE 8 Organic Chemical Technology

The course consists of a study of industrial organic chemical processes. An attempt is made to co-ordinate the fundamental principles of organic synthesis with the requirements of industrial plants. Attention is given to the special features which must be considered in the design and construction of equipment used for the production of industrial organic chemicals.

Prerequisite: ChE 4, Ch 32

3 class hours

ChE 9 Chemical Process Laboratory

This course attempts to teach the fundamentals of research by determining the optimum conditions for carrying out some unit process. After a survey of the literature has been made, a research plan is formulated. Variables are noted and their effect on the chemical process determined through laboratory experiments. The writing of reports is an essential feature of the course.

Preparation: ChE 4

1 class hour, 6 lab. hours

ChE 10 Chemical Engineering Projects

The design of equipment of commercial size forms the basis of the course. Design data is taken from the literature when it is available. Other data is obtained by experiment on small-scale industrial equipment in the laboratory. From this data and information acquired in previous courses, the commercial scale equipment is designed. Students qualified by industrial experience are sometimes assigned problems suggested by their co-operating firms which are worked out under the joint supervision of the plant engineers and the members of the staff.

Preparation: ChE 4

1 class hour, 6 lab. hours

ChE 11 Chemical Engineering Thermodynamics

A study of the fundamental principles of thermodynamics as they apply to chemical engineering. Special attention will be given to high pressure operations because of their vital importance. The

usefulness of thermodynamics to the chemical engineer for the purpose of determining properties of materials, energy balances, equilibrium conditions, and in determining the availability of energy, the driving force for all unit operations, is emphasized.

Prerequisite: Ch 46

3 class hours

ChE 12 Engineering Materials

A study of the most important properties of those engineering materials which the chemical engineers utilize in their work, and how these properties are affected by composition, heat treatment, mechanical work, and corrosion.

Stress is placed upon the selection of the correct material for a given use through the knowledge of its properties and the intelligent use of engineering principles.

A study of the causes of corrosion in both ferrous and non-ferrous metals and alloys is made as well as methods of combating corrosion.

3 class hours

Civil Engineering

CI 3 Surveying I

The course is divided into two portions, the first of which treats of basic principles such as taping, theory of the transit and use of the transit, theory of the level, care of the level and use of the level.

The second portion deals with closed and random traverses, both the D.M.D. and the co-ordinate methods being used. Particular stress is laid upon having the student use the methods and procedures as outlined by the Massachusetts Land Court.

Prerequisite: M 3

3 class hours

CI 4 Surveying II

This course is a continuation of course CI 3. The applications of leveling are first studied; stressing, differential leveling, double rodged leveling, profile leveling, and the setting of batter boards.

The principles of reconnaissance, preliminary and location surveys, as applied to highway and railroad surveying, are used as an introduction to "route surveying." These are followed by the principles and application of simple, compound, reversed, and vertical curves including sight distances, and areas bounded by circular arcs. Many of the more difficult or complex problems are solved by the use of rectangular co-ordinates (or by the use of right triangles), thus giving a continuation of the co-ordinate method as given in course CI 3. The railroad curve and the highway curve (i.e., the circular arc) are simultaneously studied throughout the course.

Preparation: CI 3

4 class hours

CI 5 Surveying I, F. & P.

The course is divided into two equal parts; the first part is devoted entirely to field work, while the second part is devoted entirely to office or plotting work.

In the field an accurate tape and transit closed traverse is run. The angles are read by repetition. The distances are taped and each traverse point is carefully tied in. The aim is to obtain data for a closed traverse equal to or better than a Class A survey as set forth by the Massachusetts Land Court. Physical features are located from this traverse. The best methods and procedures of taking field notes are emphasized at all times.

In the drafting room the student is required to compute his closed traverse by both the D.M.D. and rectangular co-ordinate methods, to submit an original drawing showing the traverse and physical features, and to trace this drawing with careful attention to such details as lettering, appearance, and title.

Prerequisite: D 1

5 lab. hours

Must be taken concurrently: CI 3

CI 6 Surveying II, F. & P.

A reconnaissance line is studied and from this a preliminary center line in the form of a random traverse is run. From this preliminary line all the physical features several hundred feet each side of the center line are located. A map is then prepared showing these data. From this map suitable curves are computed and the location of the center line thus determined is staked out in the field.

Preparation: CI 5

5 lab. hours

Must be taken concurrently: CI 4

CI 7 Surveying III

This course is a continuation of CI 4. The various field procedures and methods of computation for taking cross sections are studied. Both the average end area method of computing volumes and the prismoidal formulae are taught. The principles and methods used in balancing volumes and constructing and solving mass diagrams are presented.

The spiral or transition curve as applied to railroad and highway location is taken up. In the latter part of this course the fundamentals of railroad track problems are presented.

Prerequisite: CI 3, CI 4

3 class hours

CI 8 Surveying IV

This course consists of lectures and problem work in plane triangulation; Coast and Geodetic leveling; the plane table with its applications to topographic surveying, and the theory of the

sextant is also presented with its applications to hydrographic surveying. The use of the transit in studying astronomical surveying problems in azimuth and time, and the computations of geodetic triangulations and the conversion to rectangular coordinates from geodetic are also studied in this course.

Preparation: CI 7

3 class hours

CI 9 Surveying III, F. & P.

This is a continuation of course CI 6. A profile of the center line is run and from this a suitable sub-grade profile of this line is obtained. Further field work is undertaken to obtain a complete set of cross-section notes for the whole line, and special emphasis on field notes is made throughout the course.

In the drafting room the volumes and balanced volumes are computed. From these a mass diagram is prepared and a complete earthwork solution is solved by use of the mass diagram and the profile.

Prerequisite: CI 5, CI 6

5 lab. hours

Must be taken concurrently: CI 7

CI 10 Surveying IV, F. & P.

This course is divided nearly equally into two portions — one consisting of field work, and the other drafting room work.

The field work is triangulation, including measurements of base line, measurement of angles by repetition with precise transits or theodolite. A complete plane table map is drawn locating physical features and contours; and some of the more elementary plane table problems such as the intersection, the resection, and the three-point problems are taken up. Precise and Coast and Geodetic leveling are also considered, along with an observation on the sun for time and azimuth and an observation on Polaris for true north.

The drafting room work consists of the preparation of a topographic map, tracing of the topographic map, triangulation computations, and the solution (analytic solution) of such problems as the eccentric and the three-point problem.

Preparation: CI 9

5 lab. hours

Must be taken concurrently: CI 8

CI 11 Hydraulics I

This course is divided into two parts — the first part which treats with the laws of hydrostatics, and the second part which deals with the laws of hydrokinetics.

Under the topic of hydrostatics the following material is studied: open end U gauges, differential manometers, pressure intensity, total pressures, location of center of pressure (horizontally and vertically), pressures on curved and inclined surfaces, hoop tension and end tension, simple dams, and flotation problems.

The laws of hydrokinetics, including those of the flow of liquids through Venturi meter, orifices, short tubes, pipe lines, and open channels are studied with particular reference to Bernoulli's theorem.

In the hydraulic demonstration laboratory the following demonstrations are made: Venturi meter, orifice meter (submerged orifice), discharge of orifice into the atmosphere, discharge through orifice or short tube under falling head, and trajectory of discharge for either a short tube or an orifice.

Prerequisite: ME 20

4 class hours

Preparation: ME 21

CI 12 *Hydraulics II*

This course is a continuation of course CI 11. Hazen and Williams' formula is developed and from a flow chart of Hazen and Williams' formula flow through pipe lines, equivalent pipes, and the application to simple grid systems are studied. Rectangular weirs, with and without end contractions and with and without the velocity of approach being considered, are studied. The only other weir emphasized is the V notched or triangular weir. The Cipolletti weir and the proportional weir are discussed.

Dimensional analysis as applied to fluid mechanics is studied so that the student is able dimensionally to evaluate various hydraulic formulae. The flow of fluids and gases through closed conduits is considered by the application of Reynolds' number determining whether the flow be laminar or turbulent.

This is followed by the theory and application of the pitot tube as applied to hydraulic problems.

The course concludes with a study of the dynamic action of jets and stricims.

In the hydraulic laboratory the following demonstrations are made: rectangular weirs, triangular weir, pitot tube, and laminar and turbulent flow by Reynolds' number apparatus.

Preparation: CI 11

3 class hours

CI 15 *Theory of Structures*

The course comprises lectures and recitation work in the study of the loads, reactions, shears, and moments acting upon statically determinate structures of various kinds such as roofs and bridges. A complete and thorough presentation of the usual methods of determining bar stresses in simple trusses is also undertaken.

All of the foregoing studies are covered in detail by both algebraic and graphic methods.

Following a discussion of roof truss types and loading, the above methods are applied to the complete analysis of a roof truss.

Prerequisite: ME 22

4 class hours

Preparation: M 23

CI 16 *Theory of Structures*

A complete study of the function of influence lines in determining the shears, moments, and stresses produced in various types of simple structures by moving load systems both distributed and concentrated. Methods of providing for impact stresses in structures are discussed and analyzed. The material given in CI 15 and also in this course is then summarized by the solution of problems determining the design stresses for several types of bridge structures.

Preparation: CI 15

4 class hours

CI 18 *Concrete Testing Laboratory*

This course covers the testing of Portland cement and aggregates used in the forming of concrete. Discussions of the various theories of proportioning concrete mixes are conducted and studies made of the factors affecting the strength of concrete as produced in the laboratory and on the job. Laboratory operations are planned in such manner as to test these theories and factors. The course concludes with tests on brick as used in masonry construction.

Preparation: ME 69

1 class hour, 3 lab. hours

CI 21 *Sanitary Engineering I*

The course is designed primarily to be a lecture course supplemented by problems involving the following items of water supply engineering: the collection and assimilation of rainfall data; the methods of collection and storage for ground water or surface waters; the preparation of a dam site and the elements of design as applied to masonry and earth filled dams; methods of distributing water for domestic use, manufacturing, and for fire fighting; treatment of water for hardness; treatments of water to provide a palatable and safe water supply free from contamination. Consideration is given also to present-day activities in regard to the improvement of water supply apparatus with special emphasis upon costs of installation, cost of apparatus, and total cost as applied to water supply engineering.

Prerequisite: CI 11, CI 12

3 class hours

CI 22 *Sanitary Engineering II*

This is a companion course to CI 21. It deals with the collection and disposal of sewage and storm water, including the following items: the quantity of sewage to be collected; the sewerage systems for either a separate or a combined system; the surveying and the collection of data in order to prepare plans for the design and the construction of the collection system; and a thorough discussion of the modern methods of treating the sewage and the operation of the sewage disposal plants.

Preparation: CI 21

3 class hours

CI 23 Engineering Structures

The work begins with the analysis of bridge trusses having secondary web systems (including Baltimore and Petit trusses) and trusses with multiple web systems, lateral and portal bracing, transverse bents, viaduct towers and cantilever bridges.

A study is made of slope and deflection with emphasis on the methods of "Moment Area" and "Elastic Weights." The graphical solution of deflections as illustrated by the Williot-Mohr diagram is studied.

Prerequisite: CI 15, CI 16, ME 23

4 class hours

CI 24 Engineering Structures

The course consists of the study of simple, indeterminate structures of various kinds, continuous beams, rigid frames and trusses with redundant members. All the customary methods are developed and applied — the Three Moment Equation, Least Work, Slope-Deflection, and Moment Distribution.

Preparation: CI 23

4 class hours

CI 25 Concrete

The fundamental principles involved in the theory of reinforced concrete design, as expressed in the transformed area method, are thoroughly reviewed and investigated. This is followed by the application of this theory to the analysis and design of elementary members such as the rectangular beam, the Tee beam, beams reinforced in compression and members subjected to combined direct stress and bending. Shear, diagonal tension, vertical and inclined stirrups, bond and anchorage are also treated. Some discussion of current standard practice and specifications is included.

Prerequisite: ME 23, CI 18

4 class hours

CI 26 Concrete

The material covered in CI 25 is co-ordinated and applied to the analysis and design of retaining walls, rectangular slabs supported on four sides and flat slab construction for one-half the time.

The balance of time is devoted to Foundation Engineering. A discussion of soil types and bearing capacities, sampling procedures and elementary soil mechanics principles is undertaken. The more common types of the various foundations, such as piles and pile driving, cofferdams, caissons (both open and pneumatic), pier foundations, bridge piers and their relation to the rest of the structure are included.

Preparation: CI 25

4 class hours

CI 29 *Design of Structures*

The course consists of instruction in the design and detailing of simple structural members in steel, timber and concrete. Welding is also introduced. End connections for various types of structural material are covered thoroughly, including rivets, bolts, welds and timber connectors. Concrete footings are designed and detailed.

Preparation: CI 23, CI 25

2 class hours, 9 lab. hours

CI 30 *Design of Structures*

In this course comprehensive problems in steel, concrete and timber are worked out by the class, each student using different design data. Such work as the design of highway bridges and continuous concrete beams have been assigned. A general drawing is made of one design problem.

Preparation: CI 24, CI 26, CI 29

2 class hours, 9 lab. hours

CI 31 *Highway Engineering*

The course includes development of modern highways, highway administration and finance; the preparation of the road foundation, drainage and drainage facilities. A discussion of soil classifications and tests as they pertain to modern highway design is undertaken. The economics of highway grades and a discussion of general layout features such as vertical curves, horizontal curves and superelevation, traffic surveys and control are also included.

Prerequisite: CI 7, CI 9

3 class hours

CI 32 *Highway Engineering*

This course is a continuation of CI 31, and covers more specific details of design, cost and construction of the various types of highways, the testing of bituminous materials and the application of laboratory tests and research to road construction and soil stabilization. The course concludes with a brief discussion of airport design and layouts.

Preparation: CI 31

3 class hours

Drawing

D 1 *Engineering Drawing*

This course comprises a complete study of shape description in both orthographic and pictorial form. It provides a thorough foundation for the study of working drawings. The work is laid out according to the following divisions: care and use of instru-

ments, lettering, geometric constructions including the conic, involute and cycloidal curves, orthographic projection including multiplanar and axonometric drawing, oblique and perspective projection, technical freehand sketching, development, screw-threads, sectioning, dimensioning, and tracing.

6 class hours

D 2 Descriptive Geometry

This course comprises a complete study of the theory of projection. It is designed to develop the power to visualize and solve practical problems in spatial relations. In addition to point line and plane problems, the course includes a study of mining problems, graphic solution of stresses in framed structures, shadows, solid intersections, developable and warped surfaces.

Preparation: D 1

6 class hours

D 3 Machine Drawing

A course similar to D 4 except that it is designed to be of particular value to students of electrical engineering.

Prerequisite: D 1

6 class hours

D 4 Machine Drawing

Detail working drawings of machine parts and assembly drawings of simple machines are made in accordance with best commercial practice. Such simple phases of mechanism as are necessary to a complete understanding of machine drawing are included in the course.

Prerequisite: D 1

6 class hours

English

E 1 English I

A course in composition with especial emphasis on exposition. Principles of grammar and rhetoric are reviewed rapidly but thoroughly. Contemporary essays are studied for their value both as models and as enrichment of the student's background. Themes on subjects largely drawn from or related to the student's life and study are a weekly requirement.

3 class hours

E 2 English I

A continuation of E 1. Toward the end of the term a careful study is made of letter writing.

Preparation: E 1

3 class hours

Economics

Ec 21 Economics

After an analysis of the main characteristics of our modern economic order, attention is turned to the fundamental economic laws and principles governing the production of economic goods, the organization of business enterprise, money, banking, the business cycle, control of the price level, and international trade. Case material is used freely.

3 class hours

Ec 22 Economics

A continuation of Ec 21. The first part of the course deals with the principles of price determination under competitive and monopolistic conditions, and the principles underlying the distribution of wealth and income into wages, interest, and profits. Consideration is then given to the major aspects of the economic problems of agriculture, public utility regulation, labor, consumption, public finance, and economic reform.

Preparation: Ec 21

3 class hours

Electrical Engineering

EL 1 Electrical Engineering I

This course deals with the fundamental principles of D.C. generators, generation of E.M.F., structural parts of dynamos, armature windings, armature reaction, commutation, ratings, methods of field excitation, and characteristics of shunt, series and compound generators.

Prerequisite: P 2

3 class hours

EL 2 Electrical Engineering I

This course is a continuation of EL 1. It deals with the operating principles of the shunt, series, and compound D.C. motors, including applications and control apparatus. The course also includes a study of elementary D.C. distribution systems.

Preparation: EL 1

3 class hours

EL 5 Electrical Machinery

This course is concerned with the theory and application of the electrical equipment most often met by practicing engineers. Descriptions of the parts of the machines, their operating characteristics and of their special fields of usefulness are extended chiefly over shunt, series and compound direct current motors and

generators, alternators, transformers, synchronous and induction motors. Consideration is given to auxiliary apparatus in so far as necessary to a good understanding of the functioning of the machinery as a whole.

Tests are made on various direct and alternating current machines. The object is to give the students facility in connecting and operating the machines as well as to observe in actual practice the characteristics taken up in the lectures. Outside reports are required to be written up for each experiment.

Prerequisite: P 2

4 class hours, 4 lab. hours

EL 5A Electrical Machinery

This course is designed to meet the needs of the Chemical Engineering students in so far as their knowledge of elementary electrical engineering is concerned. Consideration is given chiefly to the study of motors, both D.C. and A.C., including their operating characteristics, control, and applications. Selection of motors and their duty cycles are also studied. The latter part of the course is devoted to the study of elementary vacuum tube theory, with emphasis on electronic control devices, involving the phototube, Thyatron, and other tubes applied to circuits used in the chemical engineering industry.

A laboratory course accompanies this lecture course, and study is made of both D.C. and A.C. motor operation and electronic control devices.

Prerequisite: P 2 and M 6

4 class hours, 4 lab. hours

EL 6 Electrical Measurements

The course comprises a brief study of measurements in general, and precision measure as applied to electrical measurements in particular. Resistance devices, galvanometers, ammeters, and voltmeters are next discussed, the treatment of other instruments being taken up later in connection with their use. This is followed by a detailed discussion of the methods of measuring various electrical quantities: resistance, resistivity, conductance; D.C. electromotive force, current, power, and energy; inductance, and magnetic induction. This part of the work involves the students' use of both visual and sound indicating devices. Some consideration is given to the principles and operation of vacuum tubes. Appropriate laboratory experiments are included.

Prerequisite: EL 5

3 class hours, 3 lab. hours

EL 9 Electrical Engineering II

A course designed to be an introduction to Alternating Current theory. Study is made of vector algebra and complex quantities

as applied to A.C. work, elementary concepts, power, power factor, and energy relations, non-sinusoidal wave forms and analysis.

Prerequisite: P 2

3 class hours

EL 10 Electrical Engineering II

A continuation of EL 9. This course deals with single phase, linear Alternating Current circuits, including series, parallel, series-parallel combinations, and Kirchhoff's laws, and introduces the concepts of inductance, impedance, susceptance, capacitance, conductance and admittance. Resonant circuits, tuned circuits, transients in linear circuits, effective impedance, and filter circuits are also studied.

Preparation or taken concurrently: M 7

3 class hours

EL 11 Electrical Engineering Laboratory

This is a laboratory course intended to develop a thorough understanding of the operating characteristics of the individual machines studied in courses EL 1 and EL 2, including work and experiments on armature and field resistance measurement, series and compound motors, and speed variations in a shunt motor. As it is also the purpose of this course to inculcate correct methods of work and preparation of preliminary and final reports, no definite number of experiments is required, but the utmost emphasis is placed upon the quality of the data, style, and content of the completed reports.

Prerequisite: EL 2

3 lab. hours

EL 12 Electrical Engineering Laboratory

This course continues the approach outlined in EL 11 and consists of experiments on heat runs, connection of D.C. generators, stray power testing and compound generator characteristics.

Preparation or taken concurrently: EL 10

3 lab. hours

EL 13 Electrical Measurements I

This course is designed to acquaint the student with the theory of precision measure as applied to electrical measurement in particular. Some of the subjects covered are theory of measurements, directly and indirectly measured quantities, recording of observations, rules of significant figures, classification of error, law of error, characteristics of error, and laws of average deviation.

Most of the problems studied fall in the following two general classifications: (1) Given the precision measures of the directly measured quantities, to determine the precision measure of the in-

directly measured quantity as calculated by the use of engineering equations which apply to measurements work. (2) Given the prescribed precision to be obtained in the indirectly measured quantity, to determine the precision measure of the directly measured components which enter into its calculation.

In this course parts and theory of operation of resistance devices, galvanometers, ammeters, and voltmeters are discussed, the treatment of other instruments being taken up later in connection with their use. This is followed by a detailed discussion of the methods of measuring various electrical quantities: resistance, resistivity, conductance; D.C. electromotive force, current, power, and energy. This part of the work involves the students' use of visual indicating devices.

The principles taught in this course are immediately applied in all experiments run in the measurements laboratory and so far as necessary in the machine testing laboratory.

Preparation or taken concurrently: EL 9

4 class hours

EL 14 Electrical Measurements II

Resistance, capacitance, inductance, magnetic induction, A.C. power and energy are treated in this course, with a detailed discussion of the methods of measuring them. This phase of the subject involves the use of both visual and sound indicating devices, and includes some work on the uses of circuits and bridges designed for high frequency measurements and tube constant determination. The student is given a thorough discussion of the construction, theory of operation, method of use, sources of error, etc., of the types of measuring instruments used in commercial work and in standardizing laboratories.

Preparation: EL 13, taken concurrently: EL 10

3 class hours

EL 17 Electrical Engineering II

This course is a continuation of Electrical Engineering II. It deals principally with polyphase circuits. Both balanced and unbalanced circuits are considered. The unbalanced condition is studied both by use of Kirchhoff's laws and by the method of symmetrical phase components.

Prerequisite: M 6, EL 10

3 class hours

EL 18 Electrical Engineering III

A careful, thorough, and detailed study of the construction, theory, operating characteristics, and testing of transformers is the aim of this course. Particular attention is given to single phase and polyphase transformers used for power purposes. Special types of transformers studied include the constant current transformer, the auto-transformer, and instrument transformers.

Preparation: EL 17

3 class hours

EL 19 *Electrical Testing Laboratory*

This course consists of a series of experiments involving the testing of machines. Preliminary reports are written by all students before the tests are performed in the laboratory. Experiments of the following type are used: measurement of stray load loss of D.C. motor, efficiency of machine by method of electrical supply of losses, electrical separation of losses, measurement of losses by retardation method, speed control of direct current motors by Thyratrons.

Preparation or taken concurrently: EL 17

2 class hours, 3 lab. hours

EL 20 *Electronics Laboratory I*

This course gives practical application of the material discussed in EL 21 and EL 22. The experiments are performed on power supplies, audio amplifiers, cathode-ray tube circuits, and intermediate-frequency transformers. Both sine wave and square wave testing of circuits is performed.

1 class hour, 3 lab. hours

EL 21 *Electronics*

The first part of this course is concerned with the motion of charged particles in electric and magnetic fields, with application to such devices as cathode-ray tubes, mass spectrograph, cyclotron, secondary emission multiplier, and the magnetron. Study is then made of non-self maintaining discharges, glow and arc discharges, thermionic emission, photoelectric emission, and characteristics of thermionic cathodes.

Prerequisite: M 7

2 class hours

Preparation: P 2

EL 22 *Electronics*

Continuing from EL 21, this course takes up the principles of operation and applications of diode, triode, and multi-electrode vacuum tubes. Among the topics considered are paths of operation, dynamic characteristics, equivalent circuits, class A, B, and C amplifiers, analysis and design of audio amplifiers, oscillators, and measuring equipment.

Preparation: EL 21

4 class hours

EL 23 *Electrical Measurements Laboratory*

This course consists of a series of experiments emphasizing the principles developed in EL 13 and EL 14. The student becomes familiar with standard test apparatus and procedure. The experiments include the bridge measurement of D.C. and low frequency

A.C. resistance, inductance, capacitance, measurement of E.M.F. by various methods, and experiments on networks involving both resonant and non-resonant conditions.

Preparation: EL 13 and 14

3 lab. hours

EL 24 Advanced Measurements Laboratory

The experiments performed in this laboratory course are designed to give practice in more advanced methods of measurement and to give the student experience in using audio oscillators, vacuum tube voltmeters, cathode-ray oscilloscopes and similar equipment. The experiments include work on filters, artificial telephone line, audio transformer, harmonic analysis, wavemeter calibration, and radio frequency bridge measurements.

Preparation: EL 13 and 14

3 lab. hours

EL 25 Electrical Engineering IV

In this course a detailed study is made of alternating current synchronous machines. In addition to the study of the synchronous generator and the synchronous motor, considerable time is spent in discussing the problems involved in operating synchronous generators in parallel.

Prerequisite: EL 18

4 class hours

EL 26 Electrical Engineering IV

This course is a continuation of EL 25. It deals with other types of alternating current machines. The machines studied in detail include the synchronous converter, the mercury arc rectifier, single phase and polyphase induction motors, induction generators, series and repulsion motors. The method of symmetrical phase components is used in the study of unbalanced conditions in certain types of motors.

Preparation: EL 25

4 class hours

EL 27 Advanced Electrical Engineering Laboratory

This is a laboratory course in alternating current machinery. The work includes tests on the heating, efficiency, and determination of the characteristics of various types of alternating current machinery, such as transformers, generators, and motors. A detailed preliminary study is made of each assigned experiment, involving the method to be used in obtaining the necessary data and the manner of obtaining the required results from this data. This is embodied in a preliminary report. The student then does the necessary laboratory work to obtain the required data, and finally works up the whole into a detailed final report. A minimum of

assistance is given by the instructor in the actual laboratory work, the initiative and resourcefulness of the student being depended on to the greatest extent.

Preparation or taken concurrently: EL 25

2 class hours, 3 lab. hours

EL 28 Advanced Electronics Laboratory

This course deals exclusively with measurements at radio frequencies including broadcast-band, short-wave, and ultra-high frequency. The apparatus used in experimentation includes a typical superheterodyne receiver, reactance modulator, frequency discriminator, detectors, class C amplifier, coaxial line matching networks, and klystron tubes.

Preparation: EL 37

1 class hour, 3 lab. hours

Prerequisite: EL 20, 22

Concurrent: EL 30, 32, 36

EL 29 Electrical Engineering V-A

This course is based on the material covered in Electronics (EL 21 and 22) continuing into the field of radio engineering, taking up the following topics: power rectifiers, voltage and current regulators; amplification, audio frequency voltage amplifiers, class A and B audio frequency amplifiers, radio frequency class A, wide band amplifiers, class B and C radio frequency power amplifiers; oscillators (sine wave), negative-resistance oscillators, principles of operation, feed-back oscillators, frequency stabilized and beat frequency oscillators.

Prerequisite: EL 21 and 22

3 class hours

EL 30 Electrical Engineering V-A

The field covered by this course includes two main parts: radiation and transmission lines as utilized at radio frequencies; the main topics being fundamental theory, fields set up by a straight wire, finite-length antennae, arrays and reflecting systems, receiving antennae, transmission lines, modified conventional transmission line theory to fit the radio frequency applications, transmission of energy on R-F lines, transmission lines as circuit elements, transmission lines as impedance matching device, transmission lines as a measuring device, transmission line practice.

Preparation or concurrently: EL 29 and 32

3 class hours

EL 31 Electrical Engineering V-B

This course, which is given during the first semester of the senior year (after a very brief consideration of the principles of hyperbolic trigonometry), opens with a discussion of the fundamental

theory of the long-distance transmission line, and continues with the methods of determining voltage and current distribution along the line with boundary conditions known at either the sending or the receiving end, in both the case of a uniform line and that of the composite line. Attention is given to the special cases of the distortionless and dissipationless lines; equivalent T and Pi representations; reflected waves. Half and quarter wave lines with consideration of the latter as a transformer conclude the course.

Preparation: M 7

3 class hours

EL 32 Electrical Engineering V-B

This course, a continuation of EL 31, given in the second semester of the senior year, begins with a discussion of important network theorems, resonance and resonant arms of various types, Foster's reactance theorem, insertion loss, impedance matching and the ideal transformer; followed by a thorough discussion of filters both "constant K" and "m-derived," of low- and high-pass, band-pass and band-elimination types. The course closes with a brief review of the use of Fourier's series so far as seems desirable; and the analysis of transients by the use of Fourier's integral.

Preparation: EL 31

3 class hours

EL 35 Ultra-High-Frequency Technique

The material covered by this course embraces the four main headings: cathode-ray tube and circuits, modulation, demodulation and receivers. The subdivisions are as follows: cathode-ray tubes and circuits, electron guns and beam formation, trigger circuits, relaxation oscillator, time base and sweep circuits, special circuits, combination of circuits; modulation, amplitude and frequency modulation, amplitude modulation circuits, frequency modulation circuits; receivers, receiver characteristics, sources of noise, tuned R-F receivers, superheterodyne receiver, regenerative and super-regenerative receiver, frequency modulated receiver.

Preparation or concurrently: EL 29, 31

4 class hours

EL 36 Ultra-High-Frequency Technique

The basic material covered may be subdivided into four general classifications: transmitters, U.H.F. generators, propagation, and wave guides. The subdivision of these are transmitters, classification, conventional transmitter circuits, frequency modulation systems, transceivers, microphones; ultra-high-frequency generators, frequency limits, ultra-high-frequency negative-grid oscillator, positive grid oscillator, velocity-modulation tubes and circuits,

magnetrons; propagation, general nature of propagation and dependence on frequency; wave guides, propagation through rectangular and round guides, resonance phenomena in wave guides, applications of resonant elements, practical utilization of wave guides.

Preparation or concurrently: EL 32, 35

4 class hours

EL 37 Electronics Laboratory II

The experiments in this course are of a more advanced nature than those of EL 20 and are concerned with circuit applications of vacuum and gas-filled tubes. The circuits covered are feed-back amplifier, regulated power supply, resistance-capacitance oscillator, self-excited oscillator, multivibrator, trigger circuits, and amplitude modulation circuits.

Preparation: EL 20

Prerequisite: EL 21, 22

Concurrent: EL 29, 31, 35

1 class hour, 3 lab. hours

EL 38 Ultra-High-Frequency Technique Laboratory

The experiments in this group are designed to acquaint the student with equipment and techniques used in high-frequency and ultra-high-frequency work. The equipment used consists of resonant line oscillators, antenna field pattern equipment, ultra-high-frequency generators (10 cm.), wave guides and associated equipment, horns and parabolas.

Preparation: EL 29, 37

Prerequisite: EL 20, 22

Concurrent: EL 30, 32, 36

1 class hour, 3 lab. hours

Geology

Gy 1 General Geology

A study of earth movements and various terrestrial applications of solar energy. Lectures on fundamental general facts as to origin and movements of the earth, weathering, work of winds, underground and surface waters, glaciers and the glacial period, lakes and swamps, and vulcanism.

3 class hours

Gy 2 General Geology

Course Gy 1 is continued with such topics as mountain formation, oceanic life, atmosphere, and meteorology. A considerable portion of time is given to the study of igneous, sedimentary and metamorphic rocks, supplemented by laboratory and field work.

Preparation: Gy 1

3 class hours

Industrial Engineering

IN 3 Production Processes I

A course in the techniques, processes, and machines used in the production of manufactured articles.

The subject matter is presented in lectures supplemented by slides, exhibits, and demonstrations. The processes covered are heat-treating, forging, welding, foundry practice, and die casting. The metallurgical principles involved are correlated with good shop practice in each case.

The construction nomenclature, and operation of the following machine tools are discussed: lathe, milling machine, planer, shaper, broaching machine, and grinder.

4 class hours

IN 4 Production Processes II

This course is designed to apply economic principles to actual manufacturing situations and to acquaint the student with the proper angles, speeds, and feeds for metal cutting tools.

Typical problems considered are the selection of the most economical material for a certain product, calculation of the minimum cost quantity in purchasing, determination of whether to use machine or hand labor for a given operation, and consideration of the cost factors involved in jig and fixture design.

The proper shapes, speeds, and feeds of the following cutting tools are discussed: milling cutter, broach, drill, lathe tool, and threading tools.

2 class hours

IN 5 Industrial Management I

The course in Industrial Management places emphasis on the administrative phases of factory and plant operation. It deals with the location of the plant; plant design, structure, and services; plant layout; standardization, simplification, and specialization; and the public relations of industry.

3 class hours

IN 6 Industrial Management II

This course is a continuation of IN 5. It deals with the control of plant operations. Each department of a modern industrial concern is considered, emphasis being placed on the organization and management problems confronted and how they may be handled, with the intention that the student shall become familiar with the activities and general working of each department and the relationship which the departments hold to one another and

to the business as a whole. In detail are considered budgeting, standards of performance, wage systems, organization, routing, scheduling, dispatching, inventory control, quality control, and visual controls such as the organization chart, planning board, and departmental report. Considerable attention is given to the distribution of overhead expenses and standard costs.

Preparation: IN 5

3 class hours

IN 7 Industrial Accounting

This is a course designed to introduce the engineering student to the methods of analyzing and recording business transactions on the books of original entry and their classification in the ledger accounts. The purpose and use of the trial balance, the work sheet, and the construction and analysis of the balance sheet and profit and loss statement are demonstrated by specific problems.

1 class hour, 4 lab. hours

IN 8 Industrial Accounting

A continuation of IN 7 demonstrating the application of fundamental accounting principles to the particular problems involved in the several forms of business organization. The specific problems considered cover the partnership, corporation, and manufacturing organization.

Preparation: IN 7

1 class hour, 4 lab. hours

IN 9 Cost Accounting

The primary purpose of this course is to establish an understanding of the basic purpose of cost accounting as a measure of operating efficiency.

The fundamental principles of cost accounting procedure are developed through the demonstration of accounting control of material, labor, and factory expenses, together with the methods by which the factory operations are tied in with the financial records of the business organization. Specific problems in job order and process costs are studied in detail.

Prerequisite: IN 8

2 class hours, 2 lab. hours

IN 10 Cost Accounting

This is a continuation of IN 9 and deals with the application of the basic principles to specific cost accounting systems and budgetary control.

Predetermined standard, estimated and associative cost systems are discussed and illustrated.

Preparation: IN 9

2 class hours, 2 lab. hours

IN 11 *Methods Engineering*

This course comprises (1) a detailed study of time and motion study work; (2) a complete study and actual practice in micro-motion which is the use of motion pictures in the motion study work; (3) the preparation of simo-charts (the use of colored charts and symbols called Therbligs) which show all the elements in an operation cycle; (4) the making of process charts which is the use of specifically designed symbols, or industrial shorthand, to record motion analysis.

Prerequisite: IN 6

2 class hours, 2 lab. hours

IN 14 *Industrial Finance*

The course in Industrial Finance is divided into two parts; the first half of the course presents the differences in the organization of partnerships, corporations, individual proprietorships, joint stock companies, and holding companies.

The second half of the course deals with problems of financial analysis. Industries are examined to determine their financial condition; their position in relation to similar concerns; the proportion of their fixed and variable expenditures; and the effect of price cutting and price changes on their sales volume, costs, and capital structure. Care is taken to give the student a basis for determining what constitutes sound financial policy for any industrial enterprise.

3 class hours

IN 15 *Sales Engineering*

This course in the principles of marketing is designed to acquaint the engineering student with the field of distribution. It includes a complete study of the functions of marketing, the institutions and middlemen of the market, a study of the trade channels used to market specific commodities, placing particular emphasis on industrial goods.

3 class hours

IN 17 *Personnel Administration*

This course presents the basic principles underlying the organization and operation of a modern department of personnel administration. The topics covered deal with selection, placement, guidance, training, wage and salary administration (job evaluation principles and merit rating as used to determine wages and salaries), safety, and health. In order to give the student a clear appreciation of the fundamentals of jobs and what they require, the course begins with the presentation of the basic principles of job evaluation. This is followed by treatment of merit rating. At

this point the student has an appreciation of the requirements of the job and is better able to understand basic principles of selection. The balance of the course deals with training, safety, and health.

4 class hours

IN 22 *Contracts*

Preparation for a career as an industrial engineer demands an understanding of the fundamental legal principles upon which modern business transactions are based. The course in Contracts treats of the common law rules which underlie all branches of business law. The study of cases and decisions is supplemented by lectures and assigned readings in textbooks in order to develop a thorough understanding of the essentials of a valid contract such as offer and acceptance, consideration and form. The interpretation, operation and discharge of contracts are also considered. Such topics as agreement, competent parties, reality of consent, legality of object, sealed instruments, and the Statute of Frauds are treated in detail.

3 class hours

IN 23 *Industrial Statistics*

The increasing use of statistics in business and in the field of industrial engineering makes essential an understanding of the fundamental methods and applications of statistical analysis. In this course the important topics considered include the following: the collection of statistical data; the presentation of statistical data in tabular and graphic forms; and the uses and construction of frequency distributions, averages, measures of dispersion and skewness, and the normal curve. Specific attention is given to the practical uses and limitations of statistics in the work of the industrial engineer.

2 class hours, 2 lab. hours

IN 24 *Industrial Statistics*

Time series analysis receives major consideration in this course. The standard procedures for measuring, separating, and eliminating trend, periodic, seasonal, cyclical, and irregular movements of time series are carefully studied. Students are required to analyze a time series related to their co-operative employment or to a field of industry in which they have especial interest. The construction of index numbers, the use of currently published index numbers, correlation, and business forecasting complete the course content. Particular regard is paid to the internal use of statistics in industrial concerns.

2 class hours, 2 lab. hours

IN 28 Motion and Time Study

This is an introductory course in work simplification and time study. It includes a study of process charts, operation analysis, motion economy, proper work place layout, use of labor-saving tools and equipment, use of the stop watch, rate setting, fatigue studies and allowances, and effects upon employee morale. Motion pictures are used and actual laboratory studies made of simple assembly operations.

2 class hours, 3 lab. hours

IN 30 Technique of Executive Control

The problems of human relations in industry are considered from the point of view of building and maintaining employee morale. Topics to be discussed include the nature of executive responsibilities, methods of control in dealing with the working group, devices for stimulating the employee toward improvement in the quantity and quality of his work, a study of the common executive difficulties in dealing with subordinates, associates, and superiors.

4 class hours

Mathematics

M 1 College Algebra

The study of algebra is scheduled to begin with the solution of the quadratic equation, simultaneous quadratics, and equations in quadratic form. However, a rapid although thorough review of the fundamentals of algebra precedes this. This solution of the quadratic is followed by a detailed study of the theory of exponents. Then follow radicals, series, variation, inequalities, and the elementary principles of the theory of equations. Considerable time is given to plotting and the use of graphs in the solution of equations. The elementary theory of complex numbers is also covered.

3 class hours

M 3 Trigonometry

This is a complete course in trigonometry and should enable the student to use all branches of elementary trigonometry both in the solution of triangles as well as in the more advanced courses where the knowledge of trigonometry is essential. Some of the topics covered are the trigonometric ratios; inverse functions; goniometry; logarithms; circular measure; laws of sines; cosines; tangents, half angles; solution of oblique and right triangles; transformation and solution of trigonometric and logarithmic equations. Considerable practice in calculation of practical

problems enables the student to apply his trigonometry to problems arising in engineering practice at an early stage. Additional work, graphical and algebraic, is done with the complex number, introducing DeMoivre's theorem, and the exponential form of the complex number.

2 class hours

M 4 *Analytic Geometry and Introduction to Calculus*

This being a basic course in preparation for any further study of mathematics, it requires a thorough knowledge of the fundamentals of algebra. The course covers cartesian and polar coordinates; graphs; the equations of simpler curves derived from their geometric properties; thorough study of straight lines, circles, and conic sections; intersections of curves; transformation of axes; plotting and solution of algebraic equations of higher order and of exponential, trigonometric, and logarithmic equations; loci problems. The general equation of the second degree is thoroughly analyzed in the study of conic sections. Some time is devoted to curve fitting from empirical data.

Explicit and implicit functions, dependent and independent variables, some theory of limits, continuity and discontinuity are given special attention both from the algebraic as well as geometric points of view. Some theorems on the infinitesimal are introduced and a study is made of infinity and zero as limits. Relative rates of change, both average and instantaneous, and the meaning of the slope of a curve follow. The differential and the derivative as applied to algebraic functions with the geometric interpretation are then studied. Simple applications with interesting practical problems help to develop interest here and lay a solid foundation for the study of the calculus. The introduction of the differential at the same time with the derivative helps considerably to bridge the large gap which usually exists when the student passes from the study of the elementary analytic geometry to the infinitesimal of calculus.

Preparation: M 1, M 3

5 class hours

M 5 *Differential Calculus*

The differential is introduced and defined at the outset of the course together with the derivative; geometric and practical illustrations are given of both; and both are carried along throughout the course. The work in the course consists of differentiation of algebraic, trigonometric, exponential, and logarithmic functions, both explicit and implicit; slopes of curves, maxima and minima with applied problems; partial differentiation; derivatives of higher order; curvature; points of inflection; related rates; velocities, acceleration; expansion of functions; series. Although the subject

matter deals with considerable theory, constant sight is kept of the practical application of the theory. The geometric interpretation of every new subject is carefully defined and problems are continually solved dealing in practical applications of the theory in geometry, physics, and mechanics.

Prerequisite: M 1

4 class hours

Preparation: M 4

M 6 *Integral Calculus*

This is a continuation of Calculus M 5 and deals with integration as the inverse of differentiation as well as the limit of summation. The topics covered are methods of integration; use of integral tables; definite integrals; double and triple integrals; areas in rectangular and polar co-ordinates; center of gravity; moment of inertia; length of curves; volumes of solids; areas of surfaces of revolution; volumes by triple integration; practical problems in work, pressure, etc., depending on the differential and integral calculus for solution, solution of simpler differential equations.

Preparation: M 5

4 class hours

M 7 *Differential Equations*

The elementary theory of differential equations and the solution of certain ordinary and partial differential equations are offered here as a general course in mathematics. Although principally a problem course in solving differential equations, properties of the equations and of their solutions are deduced, and applications to the various fields of engineering, particularly electrical engineering, are analyzed.

Preparation: M 6

4 class hours

Mechanical Engineering

ME 1 *Mechanism*

This course deals mainly with a mathematical solution of problems involving angular and linear velocities and gear trains. It embraces a careful study of paths of mechanical movements and their application to velocity diagrams, quick-return mechanisms, and cams. The theory of gear tooth outlines is also investigated by graphical methods.

6 class hours

ME 15 *Industrial Plants*

The principles involved in the erection, installation, and management of an industrial plant are studied in this course. Various types of structures are described, with attention to such details as foundations, walls, columns, floors, and windows. The calculation

and layout for a typical mill are also discussed. This material is followed by a problem on the calculation and layout of a machine shop, including power requirements and placement of machines, with special consideration to the best conditions for maximum production and the most effective routing of a given product.

Preparation: ME 23, ME 32

6 class hours

ME 16 *Industrial Plants*

This course, a continuation of ME 15, includes a problem on the heating and air conditioning of a building, and a design problem on the calculation and layout of a power plant. Sizes of equipment, costs of power generation, and various operating practices are discussed and worked out. The later problems of the course have to do with the layout of the power plant previously figured.

Preparation: ME 15

6 class hours

ME 20 *Applied Mechanics (Statics)*

The subjects treated are collinear, parallel, concurrent, and non-concurrent force systems in a plane and in space; the determination of the resultant of such systems by both algebraic and graphical means, special emphasis being placed on the string polygon method for coplanar force systems; the forces required to produce equilibrium in such systems; first moments; and problems involving static friction, such as the inclined plane and the wedge.

Prerequisite: P 1

4 class hours

ME 21 *Applied Mechanics (Kinetics)*

The subjects treated are continuation of first moments as applied to varying intensity of force and to the determination of center of gravities of areas and solids; second moments and the application to the determination of moment of inertia of plane and solid figures, radius of gyration, polar moment of inertia; product of inertia, principal axes, uniform motion, uniformly accelerated motion, variable accelerated motion, harmonic motion, simple pendulum, rotation, plane motion, work, energy, momentum and impact.

Preparation: ME 20

4 class hours

ME 22 *Strength of Materials*

The topics covered in this course are physical properties of materials, stresses in thin hollow cylinders and spheres, riveted connections of the structural and continuous plate type, welded connections, and beams, covering shearing force and bending moment with stress analysis due to these effects and the design of beams for both conditions.

Prerequisite: ME 20

Preparation: ME 21, P 4

4 class hours

ME 23 *Strength of Materials*

This is a continuation of ME 22 covering deflection of beams by the double integration method; stresses and strains in shafting due to torsion, angle of twist; horsepower; combined axial and bending loads, eccentric loads; compression members or columns by Euler's column formula, and by those of the Gordon-Rankine parabolic and straight line type.

Prerequisite: ME 22

3 class hours

ME 24 *Advanced Mechanics*

Advanced problems in the strength of materials and dynamics are treated. Among the subjects under discussion are non-symmetrical bending, curved bars, flat plates, thick hollow cylinders, dynamical stresses in machine parts, and allied subjects leading to the more advanced applications of mechanics in machine design, the elastic theory, and photoelasticity.

Preparation: ME 23

3 class hours

ME 25 *Strength of Materials*

Continuation of ME 22 covering deflection of beams by the double integration method, stresses and strains in shafting due to torsion; horsepower; combined axial and bending loads, eccentric loads, impulse, impact and momentum; the catenary and other problems of interest to electrical students.

Preparation: ME 22

2 class hours

ME 27 *Metallography*

The course in metallography is intended to show the student the relation between the crystalline structure of metals and their physical properties.

The theory of crystallization and the equilibrium diagram are studied. Specimens of metal of known composition are polished, etched, and studied by use of the metallograph, and their physical properties are compared. The effect of heat treatment on the crystalline structure is noted.

Preparation: IN 3

3 class hours

ME 29 *Heat Engineering (Power Plant Equipment)*

The course is largely a description of the many appliances used in modern power plants. There is also taken up a discussion of boilers and boiler accessories, ash and coal handling systems, the various types of engines with their valve gears and governing devices, condensers, feed-water heaters, pumps, etc.

3 class hours

ME 30 Heat Engineering (Thermodynamics)

In this introductory course in the fundamentals of thermodynamics the following subjects are discussed: general theory of heat and matter; first and second laws of thermodynamics; equations of state; fundamental equations of thermodynamics; laws of perfect gases; properties of vapors including development and use of tables and charts; thermodynamic processes of gases, and saturated and superheated vapors; and the general equations for the flow of fluids.

Preparation: P 4

4 class hours

ME 31 Heat Engineering

The principles of thermodynamics are here applied to various problems of heat engineering. These include the fundamental laws governing the flow of gases and vapors through nozzles and orifices with and without friction; the theory of vapor engines, including discussions of the Rankine, the reheating, the regenerative and the binary vapor cycles; the efficiencies and power calculations for actual steam engines; and the principles of heat transfer as applied to steady flow conditions and their applications to practical problems.

Prerequisite: ME 30

4 class hours

Preparation: ME 29

ME 32 Heat Engineering

In this course the single and multi-stage compressor cycles are studied and analyzed. Various types of modern internal combustion engines are taken up in detail, including the latest designs of automobile, airplane, and Diesel engines. Considerable stress is placed on the combustion process of power plants and internal combustion engines.

The Otto and Diesel cycles are carefully analyzed to determine how changes in pressures, compression ratios, clearances, and fuel cutoff effect the economy and performance of the engine.

Solid and air injection, high, medium, and low speed engines are also discussed.

Preparation: ME 31

4 class hours

ME 33 Refrigeration

A discussion is given of the history, theory, equipment, and applications of refrigeration. The properties and hazards of the various refrigerants; the simple and compound compression cycle; the absorption system; the jet or vapor system; devices for improving theoretical and operating performance of machines are among the topics considered.

Preparation: ME 32

3 class hours

ME 34 *Steam Turbines*

A study is first made of the flow of steam through nozzles, dynamic action of jets on moving blades, and other elements in the design of a steam turbine. This material is followed by a consideration of the various types of turbines, their governing mechanisms, condensing equipment, and other constructional details.

Preparation: ME 31

3 class hours

ME 35 *Heat Engineering*

This is a short course covering the elements of thermodynamics and affording a general discussion of modern power plant equipment. Many typical calculations are made in regard to apparatus.

Preparation: P 4

3 class hours

ME 36 *Heat Engineering*

A continuation of ME 35, together with experimental work in the laboratory. Topics taken up in class include steam engine economy, multi-valve and multi-expansion engines, steam turbines, steam condensing equipment, pumps, and internal combustion engines.

In the laboratory, experiments are performed on air blowers, steam engines, water wheels, pumps, and internal combustion engines.

Preparation: ME 35

2 class hours, 3 lab. hours

ME 39 *Engine Dynamics*

A consideration of the vibrations, balancing, critical speeds, and inertia effects of high speed internal combustion engines.

Prerequisite: ME 21

4 class hours

ME 40 *Aerodynamics*

The course comprises a study of the fundamental theory of aerodynamics which underlies all calculations concerning the performance and stability of airplanes including characteristics of airfoils and elementary propeller theory.

Preparation: ME 21, CI 12

3 class hours

ME 42 *Heating and Air Conditioning*

The most important methods of heating and air conditioning various types of buildings are studied in this course. The principles of heat transfer and air flow are reviewed, and the application of them in the various systems is brought out through lectures and problems.

Preparation: ME 21, CI 12

3 class hours

ME 44 Power Plant Engineering

This course consists of topics and problems chosen largely from engineering practice selected to convey to the engineering students a firm grasp of fundamental principles and engineering methods of attacking and analyzing problems in power plant, not only from the point of view of scientific theory, but also with due consideration of the limitations imposed by practice and by costs. Efficiency and operating costs of different types of plants such as steam, hydroelectric, and Diesel engines are also carefully studied to determine the type of plant best suited for the conditions and location involved.

Preparation: ME 32

4 class hours

ME 51 Machine Design

Further practice is given the student in the application of theoretical principles previously studied, and at the same time he becomes familiar with the many practical details which must be considered in design work. The problems taken up in the early part of the course are of a static nature, while the later problems involve dynamical stresses. The problems vary from year to year, but the following are typical of the designs taken up: hydraulic press, arbor press, hydraulic flanging clamp, crane, air compressor, punch and shear, stone crusher, and so forth.

In each design, the construction details are carefully considered, with special attention to methods of manufacture, provision for wear, lubrication, and so forth. The work is based on rational rather than empirical methods, the student being required to make all calculations for determining the sizes of the various parts and all necessary working drawings.

Preparation: ME 24

6 class hours

ME 52 Machine Design

This course comprises a continuation of Machine Design ME 51 with special reference to designs involving dynamical stresses. A thorough discussion of the principles and methods of lubrication forms a part of the course.

Preparation: ME 51

6 class hours

ME 61 Mechanical Engineering Laboratory

This course comprises a preliminary series of experiments upon various apparatus used in modern power plants, to illustrate under actual conditions the principles developed in Heat Engineering ME 30. These exercises are a preparation for more complete tests to be run during the following semester.

The knowledge they have gained in the classroom the students here apply in actual tests, and make a complete report of these experiments, including methods of testing and calculations. The following experiments are illustrative of the type of work taken up: calibration of gauges, indicator practice, plain slide valve setting, test on steam calorimeters, flow of steam through orifices, steam injector test, weir calibration, and tests on friction of drives.

Prerequisite: ME 29

4 lab. hours

Preparation: ME 31

ME 62 Mechanical Engineering Laboratory

This course consists of a series of tests on various types of power plant equipment, more complete than those made in ME 61. Among the pieces of apparatus tested are the following: steam engine, gasoline engine, air compressor, triplex power pump, steam pulsometer, rotary power pump, Pelton water wheel, centrifugal pumps, Ford gasoline engine, Warren steam pump and steam turbine. Experiments are also made in flow of water measurements and flow of air.

A complete report is made on each test, describing the machine tested, explaining how the test is made, and giving the results, in accordance with the A.S.M.E. Power Test Codes.

Preparation: ME 32, ME 61

4 lab. hours

ME 63 Mechanical Engineering Laboratory

This is a continuation of course ME 62, to which it is generally similar. Some further experiments are made in the testing of materials, such as compressive, tensile, torsion, impact, and bending tests. A boiler test of from ten to twenty-four hours' duration is made to determine the performance and efficiency of the boilers in the power plant; and oils and coals are tested in the laboratory to determine their characteristics and calorific values.

Preparation: ME 32, ME 62

1 class hour, 3 lab. hours

ME 69 Testing Materials Laboratory

Methods of testing and strength of various materials used by the engineer are taken up.

The work of this course is carried out by the students working in small groups. It includes tests to determine the elongation, reduction of areas, modulus of elasticity, yield point, and ultimate compressive strength of metals such as steel, cast iron, copper, and brass; compressive tests on timber and concrete, and tests to determine the deflection, modulus of elasticity, elastic limit, and ultimate transverse strength of steel and wooden beams subject to transverse load. Torsion and impact tests are carried out and their results correlated with those of the tensile tests.

The effect of various mixes and curing conditions on the tensile and transverse strength of cement and mortar are studied. Special problems are assigned in the failure of metals by fatigue.

Preparation: ME 22

1 class hour, 3 lab. hours

ME 73 Aircraft Structures

The fundamental analysis of the forces, reactions, shears, and moments as applied to aircraft structures is the object of this course.

Preparation: ME 23

3 class hours

ME 74 Aircraft Structures

This course deals with the structural analysis of the metal airplane. Among the topics discussed are the stability of the short column, stability of thin plates under different loading conditions, shear centers, and redundant structures. The rigid web, tension field, and truss types of spar design are considered.

3 class hours

ME 76 Aircraft Engine Design

This course covers the design of an airplane engine involving the thermodynamic principles as well as the stresses in the crankshaft, connecting rods, cylinders, springs, and other parts of the engine.

Preparation: ME 39

6 class hours

Physics

P 1 Physics I

A course in the study of the fundamental principles of the mechanics of physics. Some of the topics covered are simple harmonic motion, uniformly accelerated motion, friction, work, energy, power, fluid pressure, angular velocity, centripetal force, equilibrium under the action of a series of parallel forces and equilibrium under the action of concurrent forces.

3 class hours

P 2 Physics I

This is a thorough course in magnetism and electricity covering all the details within the scope of standard college texts on these subjects. All lectures are illustrated by means of lantern slides, motion pictures, and special apparatus.

3 class hours

P 3 Physics II

A course in the study of wave motion, sound, and light. Molecular mechanics and other fundamental principles of physics are stressed at the beginning.

All lectures in physics are accompanied by appropriate demonstrations.

Preparation: P 1, P 2

3 class hours

P 4 Physics II

The topics studied are thermometry, expansion of solids, liquids, and gases; calorimetry; change of state including latent heat of fusion and vaporization (sublimation); triple point diagram; conduction and radiation; and the mechanical equivalent of heat.

Preparation: P 1, P 2

3 class hours

P 5 Physics Laboratory

This course consists of experiments in mechanics, light, electricity, and magnetism performed by each student supplementing the lecture and class room work of courses P 1, P 2, and P 3. The experiments on mechanics include the use of the vernier, micrometers and spherometer, the calculation of true weights, the funicular polygon, gyroscopic motion, simple harmonic motion and the determination of areas by means of the planimeter. Other experiments in this course include plotting the magnetic field about a bar magnet and the determination of the pole strength and field strength of the magnet, the position of images in a combination of lenses and one experiment on electrostatics.

Preparation: P 1, P 2

2 lab. hours

P 6 Physics Laboratory

A continuation of the experiments started in P 5 including experiments on sound and heat. Some of the experiments of this course are the modulus of elasticity, the determination of the velocity of sound, the coefficient of cubical expansion of mercury, the air thermometer, the determination of the mechanical equivalent of heat, the study of the maximum and minimum thermometers, and the use of the spectroscope in the study of the bright line and solar spectra. The experiments of this course supplement the class work of courses P 1, P 2, P 3, and P 4.

Preparation: P 1, P 2

2 lab. hours

P 7 Physics Laboratory

This course is very similar to P 5 but broader in scope and designed particularly for electrical engineering students.

Preparation: P 1, P 2

4 lab. hours

P 8 Physics Laboratory

A course similar in content but broader in scope than P 6 and designed particularly for electrical engineering students.

Preparation: P 1, P 2

4 lab. hours

Physical Education

PE 1 Hygiene

One class hour a week is devoted to the study of information closely related to the physical training work and to personal and mental hygiene. For each class lecture, the student is assigned at least one hour of outside study based on the required textbook. The course includes enough of the fundamentals of physiology and anatomy to enable the student to understand such parts of the course as require some knowledge of these subjects.

1 class hour

Physical Training

All first year students are required to take Physical Training. Health, strength, and vitality do not come by chance, but by constant attention to those factors involved in their development. It is very essential for the student to acquire good habits of living.

The work in the course includes a formal calisthenic program, special exercise classes for the correction of postural defects, participation in the regular athletic program, including baseball, basketball, football, hockey, track, and many types of informal games. All members of the class are also required to learn to swim.

Students wishing to be excused from Physical Training because of physical defects are required to present a petition to the faculty supported by a physician's certificate.

2 class hours

Orientation

This course is required of all first year students and is designed to make entering students explicitly aware of those facts, principles, and techniques which are significantly related to the maintenance of their intellectual efficiency, to assist them in making desirable social adjustments in the college community, to help them make a wise choice in their upperclass fields of specialization. Special effort is made to prepare the student to make an early and satisfactory adjustment to the conditions of the co-operative work. Lectures and individual conferences.

1 class hour

Sociology

S 1 Introduction to Sociology

In presenting a survey of the origins and sources of human society, this study provides orientation for the course in principles and problems which follows. The several theories of organic evolution are discussed. The antiquity of man and basic anthropological data are considered. The racial and ethnic groupings of man are then studied in the light of biological, geographical, and cultural factors.

3 class hours

S 2 Principles of Sociology

Facts and principles basic to a general knowledge of the field of sociology are presented. The origins, forms, and forces of human associations are discussed. A study is made of the principal socio-political groups such as socialism, communism, fascism, and democracy. The course is practical in emphasis and is designed to meet the needs of the student who desires a survey of the subject.

3 class hours

Theses

Theses are not required of candidates for the bachelor's degree. Certain students, who have demonstrated marked ability in the field of research, may be permitted to substitute a thesis for one or more courses of the senior year.

By "thesis" is meant an essay involving the statement, analysis, and solution of some problem in pure or applied science. Its purpose is to demonstrate a satisfactory degree of initiative and power of original thought and work on the part of each candidate for an engineering degree.

The subject of the thesis is to be decided in conference between the candidate and that faculty member of the professional department to whom the student is assigned for supervision in thesis work; final approval, however, resting with the head of the department. The subject may be one of structural design, research, testing, study of a commercial process, etc., but in no case will a mere resume of prior knowledge or discussion, either or both, of the present state of the matter be acceptable. This, it is true, must normally be made, but in addition thereto there must be a certain amount of work planned and executed, aimed toward the extension of the present field of information regarding the subject chosen.

In many cases the student presents an individual thesis. However, in nearly equal number, acceptable subjects will be found necessitating the co-operation of at least two students, either of the same or sometimes of different professional departments. In such cases, each student is primarily responsible for a certain part of the work, while also becoming wholly familiar with the entire problem; and the completed thesis must show clear evidence of the evenly-balanced co-operation and labor of the students concerned.

The completed thesis will be examined for acceptance or rejection from the technical viewpoint by the professional departments interested, and then forwarded to the Secretary of the Faculty, final approval of the thesis resting with the Dean of the College involved.

Upon acceptance, the thesis becomes the property of the University, together with all apparatus and material used in connection therewith, except that hired or borrowed, or originally the personal property of the candidate. It is not to be printed, published, nor in any other way made public except in such manner as the professional department and the Dean shall jointly approve.

Frequently thesis subjects may be chosen on problems arising in the plant where the student is employed at co-operative work. Employers are usually glad to consult with the student in the selection of the subject and the subsequent development of the thesis.

When theses are conducted in this manner, it is understood that the employer is not expected by the University to assume any expense of the thesis nor to furnish any supplies or equipment to be used in the development of the thesis other than those which he may consider it advisable and desirable to place at the disposal of the students. The regulations governing the use of laboratories and buildings of the co-operating firms will vary in practically all cases and each student must naturally be governed definitely by the regulations existing at the plant where the thesis is to be conducted.

It is understood that the thesis work must not in any way interfere with the regular required co-operative work and must be done during hours distinctly outside of regular co-operative work hours unless special request is made by the co-operating firm for some other arrangement.

Theses conducted in conjunction with co-operating firms must be submitted in duplicate, one copy to be presented by the Director of Co-operative Work to the co-operating employer.

For all further information, candidates for the degree are referred to the "Directions for Theses," which they may obtain from their professional departments at the end of their junior year.

NORTHEASTERN UNIVERSITY

DAY COLLEGES

Courses of Instruction in

Liberal Arts
Business Administration
Engineering

1944-1946



BOSTON 15, MASSACHUSETTS

July, 1944

NORTHEASTERN UNIVERSITY

Courses of Instruction Offered in the Day Colleges

CERTAIN of the courses here listed are offered only in alternate years, and the University reserves the right to withdraw any course in which there is insufficient enrollment.

Courses not included in the prescribed curricula may be taken only after approval by the student's faculty adviser. Except where otherwise indicated, electives are not open to freshmen.

Prerequisite courses are divided into two groups. Those courses printed in type (AC2) must have been completed with passing grades before a student will be permitted to register for the advanced courses to which they apply. Those courses printed in (B3) are of such a preparatory nature that a student undertaking an advanced course without having had the preparatory courses specified will ordinarily find himself greatly handicapped, and he may not register in the advanced course without the consent of the instructor.

No.	Course	Pre-requisite	Class Hrs.	Lab. Hrs.	College*
<i>Accounting</i>					
AC1	Accounting I		4	0	BA
AC2	Accounting II		4	0	BA
AC5	Cost Accounting	AC2	4	2	BA
AC6	Cost Accounting	AC2	4	2	BA
AC7	Accounting Problems	AC4	4	0	BA
AC8	Accounting Problems	AC4	4	0	BA
AC9	C. P. A. Problems	AC4	5	0	BA
AC10	Income Tax and Public Accounting	AC4	5	0	BA

Biology

B1	General Zoology		2	2	LA
B2	General Botany		2	2	LA
B3	Invertebrate Zoology	B1	2	3	LA
B4	Invertebrate Zoology	B3	2	3	LA
B5	Vertebrate Zoology	B1	2	3	LA
B6	Vertebrate Zoology	B5	2	3	LA
B7	Animal Physiology	B6	3	0	LA
B8	Animal Physiology	B7	3	0	LA
B9	Principles of Genetics	B1,2	3	0	LA

*NOTE: BA = College of Business Administration.

LA = College of Liberal Arts.

Eng = College of Engineering.

No.	Course	Pre-requisite	Class Lab.		College
			Hrs.	Hrs.	
Biology — Continued					
B10	Principles of Genetics	B9	3	0	LA
B11	Animal Histology	B6	2	2	LA
B12	Animal Histology	B11	2	2	LA
B13	Vertebrate Embryology	B6	2	2	LA
B14	Vertebrate Embryology	B13	2	2	LA
B15	General Parasitology	B3,4	2	2	LA
B16	General Parasitology	B15	2	2	LA
B17	Mammalian Anatomy	B6	1	6	LA
B18	Mammalian Anatomy	B17	1	6	LA
B19	Histological Technique	B12	1	6	LA
B20	Histological Technique	B19	1	6	LA
B21	History of Biology		3	0	LA
B22	History of Biology		3	0	LA
B25	General Entomology	B1	3	3	LA
B26	Economic Entomology	B1,B25	3	3	LA
B61	Seminar		3	0	LA
B62	Seminar	B61	3	0	LA
B65	Thesis				LA
B66	Thesis				LA
Co-ordination					
C1	Vocational Conference		2	0	LA
C2	Vocational Conference		2	0	LA
C7	Engineering Conference		2	0	Eng
C8	Engineering Conference		2	0	Eng
C11	Business Conference		2	0	BA
C12	Business Conference		2	0	BA
Chemistry					
Ch1	General Chemistry		3	3	Eng,LA
Ch2	General Chemistry	Ch1	3	3	Eng,LA
Ch9	Qualitative Analysis	Ch1,2	4	0	Eng,LA
Ch11	Qualitative Anal. Lab.	Ch1,2	0	10	Eng,LA
Ch12	Quantitative Analysis	Ch1,2,9	3	0	Eng,LA
Ch13	Quantitative Analysis	Ch1,2,12	3	0	Eng,LA
Ch14	Quantitative Anal. Lab.	Ch1,2,11,12	0	7	Eng,LA
Ch15	Quantitative Anal. Lab.	Ch14,13	0	9	LA
Ch17	Quantitative Anal. Lab.	Ch1,2,13,14	0	5	Eng
Ch25	Organic Chemistry	Ch1,2	4	0	LA
Ch26	Organic Chemistry	Ch1,2,25	4	0	LA
Ch27	Organic Chemistry Lab.	Ch1,2,25	0	5	LA
Ch28	Organic Chemistry Lab.	Ch1,2,26,27	0	5	LA
Ch31	Organic Chemistry	Ch1,2	3	0	Eng,LA
Ch32	Organic Chemistry	Ch31	3	0	Eng,LA
Ch33	Organic Chemistry Lab.	Ch1,2,31,40	0	5	Eng,LA
Ch34	Organic Chemistry Lab.	Ch32,33	0	5	Eng,LA
Ch35	Organic Chemistry	Ch32	3	0	Eng,LA
Ch37	Organic Chemistry Lab.	Ch34,35	0	9	LA
Ch39	Organic Chemistry Lab.	Ch34,35	0	5	Eng
Ch40	Physical Chemistry	{ Ch12,14,13, 15 or 17	3	2	Eng,LA
Ch41	Physical Chemistry	Ch13,15,40	4	4	LA
Ch42	Physical Chemistry	Ch41	4	4	LA
Ch45	Physical Chemistry	Ch13,17,40	4	2	Eng

No.	Course	Pre-requisite	Class Lab.		College
			Hrs.	Hrs.	

Chemistry — Continued

Ch46	Physical Chemistry	Ch45	4	2	Eng
Ch48	Colloidal Chemistry	Ch41	3	2	LA
Ch51	Sources of Information	Ch1,2	1	0	Eng, LA
Ch52	History of Chemistry	Ch1,2	3	0	LA
Ch63	Advanced Chemistry	Ch42	3	0	LA
Ch64	Advanced Chemistry	Ch35	3	4	LA
Ch65	Thesis	Ch42	0	9	LA
Ch66	Thesis	Ch42	0	12	LA
Ch101	Adv. Physical Chemistry				LA
Ch102	Adv. Physical Chemistry				LA
Ch103	Adv. Organic Chemistry				LA
Ch104	Adv. Organic Chemistry				LA
Ch105	Graduate Thesis				LA
Ch106	Graduate Thesis				LA
Ch107	Graduate Thesis				LA
Ch108	Graduate Thesis				LA

Chemical Engineering

ChE1	Flow of Fluids	P1	3	0	Eng
ChE2	Industrial Stoichiometry	Ch12,13	3	0	Eng
ChE3	Unit Operations	ChE1,5	4	0	Eng
ChE4	Unit Operations	ChE2,3,6	4	0	Eng
ChE5	Unit Operations Lab.	ChE3	0	4	Eng
ChE6	Unit Operations Lab.	ChE4	0	4	Eng
ChE7	Inorganic Chem. Tech.	Ch9,ChE2	3	0	Eng
ChE8	Organic Chem. Tech.	Ch32,ChE4	3	0	Eng
ChE9	Chem. Process Lab.	ChE4	1	6	Eng
ChE10	Chem. Eng. Projects	ChE4	1	6	Eng
ChE11	Chem. Eng. Thermo-dynamics	Ch46	3	0	Eng
ChE12	Engineering Materials		3	0	Eng

Civil Engineering

CI3	Surveying I	M3	3	0	Eng
CI4	Surveying II	CI3	4	0	Eng
CI5	Surveying I, F & P	D1,CI3	0	5	Eng
CI6	Surveying II, F & P	CI4,5	0	5	Eng
CI7	Surveying III	CI3,4	3	0	Eng
CI8	Surveying IV	CI7	3	0	Eng
CI9	Surveying III, F & P	CI5,6,7	0	5	Eng
CI10	Surveying IV, F & P	CI8,9	0	5	Eng
CI11	Hydraulics	ME20,21	4	0	Eng
CI12	Hydraulics	CI11	3	0	Eng
CI15	Theory of Structures	ME22,23	4	0	Eng
CI16	Theory of Structures	CI15	4	0	Eng
CI18	Concrete Testing Lab.	ME69	1	3	Eng
CI21	Sanitary Engineering	CI11,12	3	0	Eng
CI22	Sanitary Engineering	CI21	3	0	Eng
CI23	Engineering Structures	CI15,16,ME23	4	0	Eng
CI24	Engineering Structures	CI23	4	0	Eng
CI25	Concrete	ME23,CI18	4	0	Eng
CI26	Concrete	CI25	4	0	Eng
CI29	Design of Structures	CI23,25	2	9	Eng
CI30	Design of Structures	CI24,26,29	2	9	Eng

No.	Course	Pre-requisite	Class Lab.		Hrs. Hrs. College
Civil Engineering — Continued					
CI31	Highway Engineering	CI7,9	3	0	Eng
CI32	Highway Engineering	CI31	3	0	Eng
Drawing and Graphic Arts					
D1	Engineering Drawing		6	0	Eng,LA
D2	Descriptive Geometry	D1	6	0	Eng,LA
D3	Machine Drawing	D1	6	0	Eng
D4	Machine Drawing	D1	6	0	Eng
English					
E1	English I		3	0	Eng,LA
E2	English I	E1	3	0	Eng,LA
E1-A	English I		3	0	LA
E2-A	English I		3	0	LA
E1-B	Fundamentals Bus. English		3	0	BA
E2-B	Fundamentals Bus. English		3	0	BA
E3-B	Business Communication		3	0	BA
E4-B	Business Communication		3	0	BA
E5-B	Advanced Report Writing		3	0	BA
E5	Advanced Composition	E2-A,1-A	3	0	LA
E6	Advanced Composition	E5	3	0	LA
E7	Creative Writing	E6	3	0	LA
E8	Creative Writing	E7	3	0	LA
E9	Journalism I		4	0	LA
E10	Journalism I	E9	4	0	LA
E11	Journalism II	E10	4	0	LA
E12	Journalism II	E11	4	0	LA
E13	Effective Speaking		2	0	BA
E14	Effective Speaking	E13	2	0	BA
E15	Survey of English Lit.		4	0	LA
E16	Survey of English Lit.		4	0	LA
E17	English Drama Before Shakespeare		3	0	LA
E18	Chaucer		3	0	LA
E19	Shakespeare		3	0	LA
E20	Shakespeare		3	0	LA
E21	19th Cent. Poetry I		3	0	LA
E22	19th Cent. Poetry II		3	0	LA
E23	17th & 18th Cent. Prose		3	0	LA
E24	19th Cent. Prose		3	0	LA
E25	American Lit. to 1860		3	0	LA
E26	American Lit. After 1860		3	0	LA
E27	History of English Novel		3	0	LA
E28	History of English Novel		3	0	LA
E29	Great European Writers		3	0	LA
E30	Great European Writers		3	0	LA
E31	Comparative Drama		3	0	LA
E32	Comparative Drama		3	0	LA
E33	Modern Lit. 1895-1915		3	0	LA
E34	Modern Lit. Since 1915		3	0	LA
E35	The Essay in England and America		3	0	LA
E36	Introduction to Criticism		3	0	LA
E61	Seminar		3	0	LA
E62	Seminar		3	0	LA

No.	Course	Pre-requisite	Class Hrs.	Lab. Hrs.	College
<i>Economics</i>					
Ec1	Economic Geography		3	0	BA
Ec2	Com. & Ind. Hist. of U. S.		4	0	BA
Ec3	Economic Principles		3	0	{ BA LA
Ec4	Economic Principles	Ec3	3	0	Same as Ec3
Ec5	Economic Problems	Ec3	3	0	{ BA LA
Ec6	Economic Problems	Ec5	3	0	Same as Ec5
Ec7	Money and Banking	Ec3,4	3	0	LA
Ec8	Business Cycles	Ec5,6	3	0	LA,BA
Ec9	Statistics in Business		2	2	BA
Ec10	Statistics in Business		2	2	BA
Ec11	Labor Problems	Ec3,4	4	0	LA,BA
Ec12	Economic Systems	Ec3,4	3	0	LA,BA
Ec14	Inter. Ec. Relations	Ec5,6	4	0	LA,BA
Ec15	Hist. of Econ. Thought	Ec5,6	3	0	LA,BA
Ec16	Adv. Econ. Theory	Ec15	3	0	LA,BA
Ec17	Statistics		3	0	LA
Ec18	Statistics	Ec17	3	0	LA
Ec21	Economics		3	0	Eng,LA
Ec22	Economics	Ec21	3	0	Eng,LA
Ec61	Seminar		3	0	LA
Ec62	Seminar	Ec61	3	0	LA
Ec65	Thesis				LA
Ec66	Thesis				LA

Education

Ed1	History of Education		3	0	LA
Ed2	History of Education		3	0	LA
Ed3	Educ. Measurements		3	0	LA
Ed4	Educ. Org. and Adm.		3	0	LA
Ed7	Comparative Education		3	0	LA
Ed9	Educ. Sociology		3	0	LA
Ed10	Educ. Philosophy		3	0	LA
Ed11	Principles of Secondary Education		4	0	LA
Ed12	Methods of Teaching in Secondary Schools		4	0	LA

Electrical Engineering

EL1	Electrical Eng. I	P2	3	0	Eng
EL2	Electrical Eng. I	EL1	3	0	Eng
EL5	Electrical Machinery	P2	4	4	Eng
EL5A	Electrical Machinery	P2,M6	4	4	Eng
EL6	Electrical Measurements	EL5	3	3	Eng
EL9	Electrical Eng. II	P2	3	0	Eng
EL10	Electrical Eng. II	M7	3	0	Eng
EL11	Electrical Eng. Lab.	EL2	0	3	Eng
EL12	Electrical Eng. Lab.	EL10	0	3	Eng
EL13	Elec. Measurements I	EL9	4	0	Eng
EL14	Elec. Measurements II	EL10,13	3	0	Eng
EL17	Electrical Eng. III	EL10,M6	3	0	Eng
EL18	Electrical Eng. III	EL17	3	0	Eng
EL19	Electrical Testing Lab.	EL17	2	3	Eng

No.	Course	Pre-requisite	Class Lab.		College
			Hrs.	Hrs.	
<i>Electrical Engineering — Continued</i>					
EL20	Electronics Lab. I		1	3	Eng
EL21	Electronics	M7,P2	2	0	Eng
EL22	Electronics	EL21	4	0	Eng
EL23	Elec. Measurements Lab.	EL13,14	0	3	Eng
EL24	Adv. Measurements Lab.	EL13,14	0	3	Eng
EL25	Electrical Eng. IV	EL18	4	0	Eng
EL26	Electrical Eng. IV	EL25	4	0	Eng
EL27	Adv. Elec. Eng. Lab.	EL25	2	3	Eng
EL28	Adv. Electronics Lab.	EL20,22,30, 32,36,37	1	3	Eng
EL29	Electrical Eng. V-A	EL21,22	3	0	Eng
EL30	Electrical Eng. V-A	EL29,32	3	0	Eng
EL31	Electrical Eng. V-B	M7	3	0	Eng
EL32	Electrical Eng. V-B	EL31	3	0	Eng
EL35	Ultra-High-Frequency Technique	EL29,31	4	0	Eng
EL36	Ultra-High-Frequency Technique	EL32,35	4	0	Eng
EL37	Electronics Lab. II	EL20,21,22, 29,31,35	1	3	Eng
EL38	Ultra-High-Frequency Tech. Lab.	EL20,22,29, 30,32,36,37	1	3	Eng
<i>French</i>					
F1	Elementary French		4	0	LA
F2	Elementary French	F1	4	0	LA
F3	Intermediate French	F2	3	0	LA
F3	Intermediate French	F1	4	0	LA
F4	Intermediate French	F3	3	0	LA
F4	Intermediate French	F3	4	0	LA
F5	Modern French Literature	F4	4	0	LA
F6	Modern French Literature	F5	4	0	LA
F7	French Classicism	F4	4	0	LA
F8	French Classicism	F4	4	0	LA
F9	French Romanticism	F4	4	0	LA
F10	French Romanticism	F9,F4	4	0	LA
<i>Banking and Finance</i>					
F13	Business Finance		3	0	BA
F14	Finance Problems		3	0	BA
F16	Banking and Business	Ec3	3	0	BA
F18	Adv. Banking Problems		4	0	BA
F19	Investments		4	0	BA
FI10	Investments		4	0	BA
FI12	Public Finance		3	0	BA
FI13	Real Estate Practice and Appraising		4	0	BA
FI14	Insurance Principles and Practice		4	0	BA

No.	Course	Pre-requisite	Class Hrs.	Lab. Hrs.	College
<i>German</i>					
G1	Elementary German		4	0	LA
G1	Elementary German		3	0	LA
G2	Elementary German		4	0	LA
G2	Elementary German	G1	3	0	LA
G3	Intermediate German	G2	4	0	LA
G4	Intermediate German	G3	4	0	LA
G5	Modern German Lit.	G4	4	0	LA
G6	Modern German Lit.	G4	4	0	LA
G7	Class. Per. of Ger. Lit.	G4	4	0	LA
G8	Class. Per. of Ger. Lit.	G4	4	0	LA
G9	Ger. Lit. of 19th Cent.	G4	4	0	LA
G10	Ger. Lit. of 19th Cent.	G4	4	0	LA

Government

Gv1	Am. Govt. and Politics		3	0	{ BA LA
Gv2	Am. Govt. and Politics		3	0	{ BA LA
Gv3	Comparative Govt.		3	0	{ BA LA
Gv4	Comparative Govt.		3	0	BA
Gv5	Am. Const. Law		3	0	LA
Gv5-B	Constitutional Law		4	0	BA
Gv6	Am. Const. Law	Gv5	3	0	LA
Gv7	Origins of Political Theory		3	0	{ BA LA
Gv8	Modern Political Theory		3	0	{ BA LA

Geology

Gy1	General Geology		3	0	Eng
Gy2	General Geology	Gy1	3	0	Eng
Gy5	Historical Geology	Gy2	3	0	LA
Gy6	Historical Geology	Gy5	3	0	LA

History

H1	History of Civilization		4	0	{ BA LA
H2	History of Civilization		4	0	Same as H1
H5	Europe of 1789-1870		3	0	LA
H6	Europe Since 1870		3	0	LA
H7	England to 1688		3	0	LA
H8	England Since 1688		3	0	LA
H9	United States to 1865		3	0	LA, BA
H10	United States Since 1865		3	0	LA, BA
H11	Latin American History		3	0	LA
H12	Latin American History		3	0	LA
H13	English Const. History		4	0	LA
H14	American Const. History		4	0	LA
H15	Far East Int. Rel. 1840-1900		3	0	LA
H16	Far East Int. Rel. Since 1900		3	0	LA

No.	Course	Pre-requisite	Class Hrs.	Lab. Hrs.	College
<i>Industrial Administration</i>					
IA1	Industrial Management I		3	0	BA
IA2	Industrial Management II		3	0	BA
IA3	Personnel Administration		4	0	BA
IA4	Personnel Problems		4	0	BA
IA6	Motion and Time Study		4	0	BA
IA14	Production Processes I		4	0	BA
<i>Industrial Engineering</i>					
IN3	Production Processes I		4	0	Eng
IN4	Production Processes II		2	0	Eng
IN5	Industrial Mgt. I		3	0	Eng
IN6	Industrial Mgt. II	IN5	3	0	Eng
IN7	Industrial Accounting		1	4	Eng
IN8	Industrial Accounting	IN7	1	4	Eng
IN9	Cost Accounting	IN8	2	2	Eng
IN10	Cost Accounting	IN9	2	2	Eng
IN11	Methods Engineering	IN6	2	2	Eng
IN14	Ind. Finance		3	0	Eng
IN15	Sales Engineering		3	0	Eng
IN17	Personnel Administration		4	0	Eng
IN22	Contracts		3	0	Eng
IN23	Industrial Statistics		2	2	Eng
IN24	Industrial Statistics		2	2	Eng
IN27	Industrial Management		3	0	Eng
IN28	Motion and Time Study		2	3	Eng
IN30	Tech. Exec. Cont.		4	0	Eng
<i>Business Law</i>					
L1	Legal Bases of Business		3	0	BA
L2	Legal Bases of Business		3	0	BA
<i>Mathematics</i>					
M1	College Algebra		3	0	Eng
M3	Trigonometry		2	0	LA
M4	Analytic Geometry and Intro. to Calculus	M1,3	5	0	Eng
M5	Differential Calculus	M1,4	4	0	LA
M6	Integral Calculus	M5	4	0	Eng
M7	Differential Equations I	M6	4	0	Eng
M8	Differential Equations II	M6,7	4	0	LA
M9	Higher Algebra	M1,3,4	4	0	LA
M10	Curve Analysis	M5	4	0	LA
M11	Solid Anal. Geometry	M4	4	0	LA
M12	Modern Geometry	M4	4	0	LA
M13	Spherical Trigonometry	M3	4	0	LA
M14	Hist. of Mathematics		3	0	LA
M15	Advanced Calculus	M6	4	0	LA
M16	Advanced Calculus	M15	4	0	LA
M17	Series	M5,6	4	0	LA
M18	Theory of Equations	M5,6	4	0	LA

No.	Course	Pre-requisite	Class Lab.		College
			Hrs.	Hrs.	
Marketing and Advertising					
MA1	Marketing Principles		4	0	BA
MA2	Marketing Problems		4	0	BA
MA3	Sales Management		4	0	BA
MA4	Sales Management		4	0	BA
MA5	Advertising Principles		4	0	BA
MA6	Advertising Problems		4	0	BA
MA7	Retail Store Mgt.		4	0	BA
MA8	Retail Merchandising		4	0	BA

Mechanical Engineering

ME1	Mechanism		6	0	Eng
ME15	Industrial Plants	ME23,32	6	0	Eng
ME16	Industrial Plants	ME15	6	0	Eng
ME20	Applied Mech. (Statics)	P1	4	0	Eng
ME21	Applied Mech. (Kinetics)	ME20	4	0	Eng
ME22	Strength of Materials	ME20,21,P4	4	0	Eng
ME23	Strength of Materials	ME22	3	0	Eng
ME24	Advanced Mechanics	ME23	3	0	Eng
ME25	Strength of Materials		2	0	Eng
ME27	Metallography	IN3	3	0	Eng
ME29	Heat Eng. (Power Pl't Eq.)		3	0	Eng
ME30	Heat Eng. (Thermo.)	P4	4	0	Eng
ME31	Heat Engineering	ME30,29	4	0	Eng
ME32	Heat Engineering	ME31	4	0	Eng
ME33	Refrigeration	ME32	3	0	Eng
ME34	Steam Turbines	ME31	3	0	Eng
ME35	Heat Engineering	P4	3	0	Eng
ME36	Heat Engineering	ME35	2	3	Eng
ME39	Engine Dynamics	ME21	4	0	Eng
ME40	Aerodynamics	ME21,C112	3	0	Eng
ME42	Heating and Air Cond.	ME21,C112	3	0	Eng
ME44	Power Plant Eng.	ME32	4	0	Eng
ME51	Machine Design	ME24	6	0	Eng
ME52	Machine Design	ME51	6	0	Eng
ME61	Mechanical Eng. Lab.	ME29,31	0	4	Eng
ME62	Mechanical Eng. Lab.	ME32,61	0	4	Eng
ME63	Mechanical Eng. Lab.	ME32,62	1	3	Eng
ME69	Testing Materials Lab.	ME22	1	3	Eng
ME73	Aircraft Structures	ME23	3	0	Eng
ME74	Aircraft Structures		3	0	Eng
ME76	Aircraft Eng. Design	ME39	6	0	Eng

Physics

P1-A	Survey of Physical Science		4	0	LA
P1	Physics I		3	0	{ Eng LA
P2-A	Survey of Physical Science		4	0	LA
P2	Physics I		3	0	Same as P1
P3	Physics II	P1,2	3	0	{ Eng LA
P3-A	General Physics		4	4	LA

No.	Course	Pre-requisite	Class Hrs.	Lab. Hrs.	College
Physics — Continued					
P4	Physics II	P1,2	3	0	{ Eng LA
P4-A	General Physics		4	4	LA
P5	Physics Laboratory	P1,2	0	2	{ Eng LA
P6	Physics Laboratory	P1,2	0	2	{ Eng LA
P7	Physics Laboratory	P1,2	0	4	Eng
P8	Physics Laboratory	P1,2	0	4	Eng
P9	Optics	P3,M6	3	2	LA
P10	Optics	P9	3	2	LA
P13	Acoustics	P3,M6	3	2	LA
P14	Acoustics	P13	3	2	LA
P15	Modern Physics	P4,M7	3	2	LA
P16	Modern Physics	P15	3	2	LA
P17	Electronics	P1,2,3,4,5,6	3	2	LA
P18	Electronics	P17	3	2	LA
P65	Thesis				LA
P66	Thesis				LA
P101	Theoretical Physics				LA
P102	Theoretical Physics				LA
P103	Quantum Mechanics				LA
P104	Quantum Mechanics				LA
P105	Applied Mathematics				LA
P106	Applied Mathematics				LA
P107	Graduate Thesis				LA
P108	Graduate Thesis				LA
P109	Graduate Thesis				LA
P110	Graduate Thesis				LA
Public Administration					
PA2	Public Administration I		4	0	BA
PA4	Political Concepts		4	0	BA
PA5	Bus. and Govt.		4	0	BA
PA7	Public Administration II		4	0	BA
PA8	Public Administration III		4	0	BA
Physical Education					
PE1	Hygiene		1	0	All
PE3	Physical Training		2	0	All
PE4	Physical Training		2	0	All
PE5	Princ. of Phys. Ed.		3	0	LA
PE6	Play and Recreation		3	0	LA
PE7	Hist. of Phys. Ed.		3	0	LA
PE8	Admin. of Phys. Ed.		3	0	LA
PE9	Football		3	0	LA
PE11	Track and Field Events		3	0	LA
PE12	Basketball and Baseball		3	0	LA

No.	Course	Pre-requisite	Class Lab.		Hrs. Hrs. College
Philosophy					
Ph1	Intro. to Philosophy		3	0	LA
Ph2	Problems of Philosophy		3	0	LA
Ph3	History of Philosophy		3	0	LA
Ph4	History of Philosophy		3	0	LA
Ph5	Philosophy of Religion		3	0	LA
Ph6	Logic		3	0	LA
Psychology					
Ps1	Intro. to Diff. Psych.		3	0	LA
Ps2	General Psychology		3	0	LA
Ps1-B	Psychology		3	0	BA
Ps2-B	Psychology		3	0	BA
Ps3	Experimental Psychology	Ps2	2	4	LA
Ps4	Differential Psychology	Ps3	2	4	LA
Ps5	Educ. Psychology	Ps2	4	0	LA
Ps7	Soc. Psych. of Everyday Life		3	0	LA
Ps8	Soc. Psych. Theory and Methods		3	0	LA
Ps9	Psych. of Personality	Ps2	4	0	LA
Ps10	Abnormal Psychology	Ps9	4	0	LA
Ps13	Psychological Testing	Ps4	3	0	LA
Ps14	Adv. Experimental Lab.	Ps3	3	0	LA
Ps61	Seminar		3	0	LA
Ps62	Seminar	Ps61	3	0	LA
Sociology					
S1	Intro. to Sociology		3	0	{ Eng BA LA
S2	Principles of Sociology		3	0	Same as S1
S3	Social Problems	S1,2	3	0	LA,BA
S4	Social Pathology	S1,2	3	0	LA,BA
S5	Criminology	S1,2	3	0	LA
S6	Penology	S5	3	0	LA
S7	Prin. of Social Ethics	S1,2	3	0	LA
S8	Probs. in Social Ethics	S7	3	0	LA
S9	The Family	S1,2	3	0	LA
S10	The Family	S9	3	0	LA
S11	Social Control	S3,4,Ph2	3	0	LA
S12	Social Progress	S11	3	0	LA
S13	Population Problems	S1,2	3	0	LA
S14	Urban Sociology	S1,2	3	0	LA
S15	History of Sociological Thought	S3,4,Ph2	3	0	LA
S16	Sociology of Religion	S3,4	3	0	LA
S61	Seminar		3	0	LA
S62	Seminar	S61	3	0	LA
S65	Thesis				LA
S66	Thesis				LA

No.	Course	Pre-requisite	Class Lab.		Hrs. Hrs. College
Spanish					
Sp1	Elementary Spanish		3	0	LA
Sp1	Elementary Spanish		4	0	LA,BA
Sp2	Elementary Spanish	Sp1	3	0	LA
Sp2	Elementary Spanish	Sp1	4	0	LA,BA
Sp3	Intermediate Spanish	Sp2	4	0	LA,BA
Sp4	Intermediate Spanish	Sp3	4	0	LA,BA
Sp5	Span. Lit. of the Golden Age	Sp4	4	0	LA
Sp6	Span. Lit. of the Golden Age	Sp4	4	0	LA
Sp7	Mod. Spanish Literature	Sp4	4	0	LA
Sp8	Mod. Spanish Literature	Sp4	4	0	LA
Sp9	Mod. Span. American Lit.	Sp4	4	0	LA
Sp10	Mod. Span. American Lit.	Sp4	4	0	LA
Unclassified					
U4	Business Policy		4	0	BA
Ps2-A	Orientation		1	0	All
	Theses (see pages 136, 172, 230)				

General Index

	Page
Absences.....	51
Accounting — Law Club.....	37
Activities.....	32
Activities Assembly Hall.....	31
Administrative Officers.....	7, 8
Administrative Staff.....	9
Admission Requirements	
College of Liberal Arts.....	70
College of Business Administration.....	144
College of Engineering.....	176
Advanced Standing	
College of Liberal Arts.....	72
College of Business Administration.....	146
College of Engineering.....	178
Aims and Methods.....	63, 64, 141, 175
Alumni Association.....	59
Application for Admission	
College of Liberal Arts.....	71
College of Business Administration.....	145
College of Engineering.....	177
Application Blank.....	251
Assistant Professors.....	11
Associate Professors.....	11
Astronomy Club.....	35
Athletic Association.....	33
Athletic Field.....	31
Attendance.....	50
Awards and Prizes.....	55
Banking and Finance Club.....	35
Beacon Hill Building.....	23
Biological Laboratory Equipment.....	24
Books and Supplies.....	48
Boston — A Great Educational Center.....	22
Buildings and Facilities.....	22
Business Administration, College of.....	139-172
Calendar for College Year, 1944-1945.....	4
Camera Club.....	36
Cauldron, College Annual.....	34
Chapel Preachers.....	17
Chemical Engineering Laboratory Equipment.....	29
Chemical Laboratory Deposit.....	45
Chemistry Laboratories and Equipment.....	24
Chess Club.....	36
Civil Engineering Laboratories and Equipment.....	26
Condition Examinations.....	48
Convocation Lecturers.....	16
Convocations.....	38
Co-operative Plan.....	40
Correlation of Theory and Practice.....	42
Earnings.....	43
Faculty Co-ordinators.....	40
How It Works.....	40
Location of Work.....	43
Placement at Work.....	40
Positions Available.....	42

Co-operative Plan — Continued	Page
Records of Co-operative Work	42
Reports	42
Supervision and Guidance	41
Training Schedules	44
Types of Co-operative Work	43
Corporation	6
Counselors	53
Courses of Instruction, List of	233-246
Courses of Instruction, Synopses of	
College of Liberal Arts	82-136
Business Administration	152-171
Engineering	190-230
Dean's List	49
Debating Society	36
Degrees	
Liberal Arts	75
Business Administration	147
Engineering	179
Deposit, Laboratory	45
Design and Drafting Rooms	30
Discipline	50
Dormitories	52
Dramatic Club	36
East Building	22
Electrical Engineering Laboratory Equipment	28
Engineering, College of	173-231
Engineering Societies, National	35
Entrance Examinations in Boston	72, 146, 178
Entrance Requirements	
College of Liberal Arts	70
College of Business Administration	144
College of Engineering	176
Evening Courses, College of Liberal Arts	64
Examinations	48
Executive Council	7
Expenses	47
Faculty	10
Faculty Committees	14
Fees	45-47
Fraternities	39
Freshman Counseling	53
Freshman Orientation Period	53
General Information	45
General Statement	19
Grades	49
Graduate Study	79
Graduation Fee	47
Graduation with Honors	75
Graduation Requirements	75, 147, 179
Gymnasium	31
Honor Societies	34
Housing Regulations	51
Industrial Chemical Laboratory	29
Industrial Engineering Equipment	29
Instructors	12
Inter-Fraternity Council	39
International Relations Club	37
Laboratory Deposits and Fees	45
Law and Accounting Club	37

	Page
Lecture Assembly Halls	31
Liberal Arts, College of	61-137
Liberal Arts, Preparation for a Career	65-69
Libraries	30
List of Courses Offered	233-246
Location of University	22
Marks	49
Mathematics Society	37
Mechanical Engineering Laboratory Equipment	27
Musical Clubs	36
Natatorium	31
National Engineering Societies	35
New Building	23
<i>Northeastern News</i>	34
Omega Sigma Society (for women students)	37
Part-Time Work	48
Payments, Tuition	46
Personal Interview	71
Physical Examination	53
Physical Training Equipment	31
Physics Laboratories Equipment	25
Prizes	55
Professional Societies and Clubs	34
Professors	10
Programs of Study	74, 76-78, 148-150, 180-189
Psychology Laboratory	26
Public Speaking Contest	57
Radio Club	38
Refunds	47
Registration	72, 146, 178
Report Cards	49
Requirements for Graduation	75, 147, 179
Richards Hall	23
Rifle Club	38
Scholarships	55
Scholastic Year for Seniors	50
Secretarial Staff	15
Sorority (Sigma Phi Psi)	39
South Building	23
Statistical Summary	58
Student Activities	32
Student Activities Fees	45
Student Council	32
Student Union	33
Supplies	48
Theses	136, 172, 230
Transportation	22
Tuition	45
University Committees	7
University Fee	45
Wartime Policy, Statement of	
Yacht Club	38
Yearbook	34

OFFICE HOURS

DEPARTMENT OF ADMISSIONS

9 A.M. TO 4 P.M.

daily

Saturday 12.00

Noon

Wednesday Eve-
nings by Appointment

Northeastern University

360 HUNTINGTON AVENUE

BOSTON 15, MASS.

Paste a Small

Photo or

Snapshot

in This Space

APPLICATION FOR ADMISSION

(A non-returnable fee of five dollars must accompany this application.

Make checks, money orders, or drafts payable to
Northeastern University)

To Director of Admissions:

I (Please print
name in full)

hereby respectfully apply for admission to the College of.....

..... for the school year beginning.....

I expect to major in.....

**NOTE: The applicant should fill out the following form
(both sides) with care.**

Address.....

.....Tel.....

Date of Birth.....Age.....

Place of Birth.....

Race.....Religion.....Nationality.....

Graduate of.....High School, Year.....

Location of High School.....

Name of Principal.....

Other high schools you have attended.....

Names of Principals.....

If not a graduate, state the years of attendance and why you left.....

Father's, Mother's, or Guardian's Name.....

Address.....

Father's work, business or profession.....

Names and addresses of two other persons to whom we may direct
inquiries concerning you.
.....
.....

(OVER)

Weight.....Height.....

Have you any physical infirmities? Explain, if any.....

Defects of speech.....

Defects of hearing.....

Defects of sight.....

Bodily infirmities.....

Is your general health good, fair, or poor?.....

Have you done collegiate work elsewhere?.....

If so, name and address of college or university.....

Name of person who will furnish transcript of your college record.....

Do you expect advanced credit for past collegiate work?.....

List all athletics and other extracurricular high school activities you have engaged in.....

Names and addresses of all past employers with brief description of each job, length of employment, and wages received:.....

Declaration of Parent or Guardian

This application has been read by me and has my approval.

.....
Signature of Parent or Guardian

Date.....

Milton J. Schlagenhauf, Director of Admissions
Northeastern University
360 Huntington Avenue
Boston 15, Mass.

Dear Sir:

Please send me additional information on the following points:

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

Name.....

Street and Number.....

Town or City.....

State.....

NORTHEASTERN UNIVERSITY

(CO-EDUCATIONAL)

COLLEGE OF LIBERAL ARTS

Offers a broad program of college subjects serving as a foundation for the understanding of modern culture, social relations and technical achievement. Varied opportunities available for vocational specialization. Degree: Bachelor of Science or Bachelor of Arts.

COLLEGE OF ENGINEERING

Offers curricula in Civil, Mechanical (with Industrial and Aeronautical options), Electrical, and Chemical Engineering. Classroom study is supplemented by experiment and research in well-equipped laboratories. Degree: Bachelor of Science in the professional field of specialization.

COLLEGE OF BUSINESS ADMINISTRATION

Offers curricula in Accounting, Marketing and Advertising, and Industrial Administration. Each curriculum represents in itself a broad survey of business technique, differing from the others chiefly in emphasis. Degree: Bachelor of Science in Business Administration.

SCHOOL OF LAW

Offers day and evening undergraduate programs admitting those who present a minimum of one-half of the work accepted for a bachelor's degree in an approved college or its full equivalent, each program leading to the degree of Bachelor of Laws.

SCHOOL OF BUSINESS

Offers curricula through evening classes leading to the degree of Bachelor of Business Administration with appropriate specification in Accounting, Management, and Engineering and Business. Preparation for C.P.A. examinations. Intensive programs arranged to meet special needs.

EVENING COURSES OF THE COLLEGE OF LIBERAL ARTS

Certain courses of the College of Liberal Arts are offered during evening hours in the fields of Economics, English, History, Government, Psychology and Sociology. A special program preparing for admission to the School of Law is also available. The program is equivalent in hours to one-half the requirement for the A.B. or S.B. degree. Special courses also available. Degree of Associate in Arts conferred.

The Colleges of Liberal Arts, Engineering, and Business Administration offer day programs and are conducted on the Co-operative Plan. After the freshman year students may alternate their periods of study with periods of work in the employ of business or industrial concerns. Under this plan they gain valuable experience and earn a large part of their college expenses. Full-time curricula are available for students who do not desire the Co-operative Plan.

In addition to the above schools the University has affiliated with it and conducts: the Lincoln Technical Institute offering, through evening classes, courses of college grade in various fields of engineering leading to the degree of Associate in Engineering; and the Lincoln Preparatory School, an accredited evening school preparing for college entrance and offering other standard high school programs.

For further information regarding any of the above schools, address

NORTHEASTERN UNIVERSITY

BOSTON 15, MASSACHUSETTS

School of Law

47 MT. VERNON STREET

Telephone: KENMORE 5800

Other Schools

360 HUNTINGTON AVENUE



NORTHEASTERN UNIVERSITY

School of Law



1945 - 1946

NORTHEASTERN UNIVERSITY

School of Law

47 MT. VERNON STREET · BOSTON 8, MASSACHUSETTS

Telephone KENmore 5800

STUART M. WRIGHT, *Dean*

NORTHEASTERN UNIVERSITY

Forty-seventh Annual Catalogue

OF THE

School of Law

1 9 4 5



1 9 4 6

Day and Evening Divisions

CALENDAR

1945

Fall Term

17 September	Monday	Classes begin.
17 September	Monday	First tuition installment due.
5 November	Monday	Second tuition installment due.
22 December	Saturday	Christmas recess begins.

1946

2 January	Wednesday	Classes resumed.
16 January	Wednesday	Fall Term ends.

Winter Term

21 January	Monday	Classes begin.
21 January	Monday	First tuition installment due.
11 March	Monday	Second tuition installment due.
10 May	Friday	Winter Term ends.

Summer Term

20 May	Monday	Classes begin.
20 May	Monday	First tuition installment due.
8 July	Monday	Second tuition installment due.
6 September	Friday	Summer Term ends.

COURSES TO BE OFFERED
1945-1946

Fall Term

CONFLICT OF LAWS	PERSONAL PROPERTY
CONSTITUTIONAL LAW	PLEADING & PRACTICE I
CONTRACTS	PROPERTY III
EQUITY	SALES
MORTGAGES	

Winter Term

AGENCY	EVIDENCE
BUSINESS ASSOCIATIONS	PROPERTY II
CREDITORS' RIGHTS	TORTS
CRIMINAL LAW	TRUSTS
DAMAGES	

Summer Term 1946

ADMINISTRATIVE LAW	PLEADING & PRACTICE I
CONTRACTS	PLEADING & PRACTICE II
EQUITY	PROPERTY I
LABOR LAW	TAXATION
PERSONAL PROPERTY	WILLS

THE NORTHEASTERN UNIVERSITY CORPORATION

ROBERT GRAY DODGE, *Chairman*

FRANK LINCOLN RICHARDSON, *Vice-Chairman*

CARL STEPHENS ELL, *President of the University*

HENRY NATHANIEL ANDREWS, *Treasurer*

EVERETT AVERY CHURCHILL, *Secretary*

JOSEPH FLORENCE ABBOTT	HARRY HAMILTON KERR
CHARLES FRANCIS ADAMS	FRANK HOWARD LAHEY
WILMAN EDWARD ADAMS	HALFDAN LEE
ROGER AMORY	GALEN DAVID LIGHT
ARTHUR ATWOOD BALLANTINE	EDWARD ABBOTT MACMASTER
GEORGE LOUIS BARNES	JOHN RUSSELL MACOMBER
THOMAS PRINCE BEAL	ALBERT EDWARD MARSHALL
FARWELL GREGG BEMIS	HAROLD FRANCIS MASON
SAMUEL BRUCE BLACK	JAMES FRANKLIN McELWAIN
HENRY GODDARD BRADLEE	HUGH DEAN McLELLAN
GEORGE AUGUSTUS BURNHAM	IRWIN LIKELY MOORE
GODFREY LOWELL CABOT	FRED LESTER MORGAN
PAUL CODMAN CABOT	IRVING EDWIN MOULTROP
WALTER CHANNING	CLARENCE LUCIAN NEWTON
WILLIAM CONVERSE CHICK	SAMUEL NORWICH
PAUL FOSTER CLARK	OLAF OLSEN
WILLIAM H. COLLINS	AUGUSTIN HAMILTON PARKER, JR.
SEARS B. CONDIT	GEORGE EDWIN PIERCE
ALBERT MORTON CREIGHTON	ROGER PIERCE
EDWARD DANA	MATTHEW POROSKY
EDWARD DANE	FREDERICK SANFORD PRATT
JUSTIN WHITLOCK DART	ROGER PRESTON
WILLIAM JAMES DAVIDSON	SIDNEY RABINOVITZ
BERNARD W. DOYLE	STUART CRAIG RAND
PAUL AUGUSTUS DRAPER	WILLIAM McNEAR RAND
DAVID FRANK EDWARDS	JAMES LORIN RICHARDS
WILLIAM PARTRIDGE ELLISON	HAROLD BOURS RICHMOND
JOSEPH BUELL ELY	CHARLES FOREST RITTENHOUSE
ROBERT GREENOUGH EMERSON	JOHN JAMES ROBINSON
JOHN WELLS FARLEY	ROBERT BILLINGS RUGG
ALLAN FORBES	LEVERETT SALTONSTALL
ERNEST BIGELOW FREEMAN	RUSSELL MARYLAND SANDERS
FRANKLIN WILE GANSE	ANDREW SEBASTIAN SEILER
HARVEY DOW GIBSON	FRANK PALMER SPEARE
MERRILL GRISWOLD	RUSSELL HENRY STAFFORD
GEORGE HANSEN	FRANCIS ROBERT CARNEGIE STEELE
HENRY INGRAHAM HARRIMAN	CHARLES STETSON
CARROLL SHERLOCK HARVEY	EARL PLACE STEVENSON
HARVEY P. HOOD	ROBERT TREAT PAINE STORER
CHANDLER HOVEY	FRANK HORACE STUART
WESTON HOWLAND	EDWARD WATSON SUPPLE
HOWARD MUNSON HUBBARD	RALPH EMERSON THOMPSON
MAYNARD HUTCHINSON	JAMES VINCENT TONER
RAYMOND WINFIELD JAMES	ELIOT WADSWORTH
ARTHUR STODDARD JOHNSON	EUSTIS WALCOTT
CHARLES BERKLEY JOHNSON	EDWIN SIBLEY WEBSTER
JACOB JOSEPH KAPLAN	SINCLAIR WEEKS

COMMITTEES

ADVISORY COMMITTEE OF THE CORPORATION FOR THE SCHOOL OF LAW

ROBERT GRAY DODGE, *Chairman*

GEORGE LOUIS BARNES
JOHN WELLS FARLEY

JACOB JOSEPH KAPLAN
STUART CRAIG RAND

THE EXECUTIVE COUNCIL

CARL STEPHENS ELL, *Chairman*

EVERETT AVERY CHURCHILL
ALBERT ELLSWORTH EVERETT

MILTON JOHN SCHLAGENHAUF
WILLIAM CROMBIE WHITE

THE UNIVERSITY CABINET

CARL STEPHENS ELL, *Chairman*

EVERETT AVERY CHURCHILL
ALBERT ELLSWORTH EVERETT
ROGER STANTON HAMILTON
CHARLES WILLIAM HAVICE
WILFRED STANLEY LAKE
JAMES WALLACE LEES
HAROLD WESLEY MELVIN

WINTHROP ELIOT NIGHTINGALE
RUDOLF OSCAR OBERG
EDWARD SNOW PARSONS
JOHN BUTLER PUGSLEY
MILTON JOHN SCHLAGENHAUF
J. KENNETH STEVENSON
WILLIAM CROMBIE WHITE

STUART MEAD WRIGHT

ADMINISTRATIVE OFFICERS

- ROBERT GRAY DODGE, A.B., A.M., LL.B., LL.D.
Chairman of the Corporation
CARL STEPHENS ELL, A.B., M.S., Ed.M., Sc.D.
President of the University
EVERETT AVERY CHURCHILL, A.B., Ed.D.
Vice-President of the University
STUART MEAD WRIGHT, A.B., LL.B.
Dean of the School of Law

FACULTY

- STUART MEAD WRIGHT, A.B., LL.B.
Dean and Professor of Law
EDWIN WILSON HADLEY, A.B., J.D., LL.M.
Professor of Law
RUSSELL DAVEY GREENE, LL.B., LL.M.
Professor of Law
JOSEPH GERARD CRANE, A.B., LL.B.
Professor of Law
FRANCIS XAVIER CARMODY, B.S., LL.B.
Assistant Professor of Law
-
- ROBERT FISKE BRADFORD, A.B., LL.B.
Lecturer in Criminal Practice
ROBERT GRAY DODGE, A.B., A.M., LL.B., LL.D.
Lecturer in Legal Ethics
DONALD T. FIELD, A.B., LL.B.
Lecturer in Conflict of Laws
DAVID GREER, LL.B.
Lecturer in Administrative Law
REUBEN LEVI LURIE, A.B., LL.B.
Lecturer in Criminal Law
CONRAD W. OBERDORFER, J.U.D., LL.B., LL.M.
Lecturer in Constitutional Law
STUART CRAIG RAND, A.B., LL.B.
Lecturer in Trial Practice
HAROLD BENJAMIN ROITMAN, A.B., LL.B.
Lecturer in Labor Law
AUSTIN WAKEMAN SCOTT, A.B., LL.B., LL.D.
Lecturer in Trusts
WARREN ABNER SEAVEY, A.B., LL.B., LL.D.
Lecturer in Agency
RAYMOND SANGER WILKINS, A.B., LL.B.
Lecturer in Appellate Practice
-
- JAMES HERBERT TIBBETTS
Librarian
DORIS EDNA KOCH
Registrar and Secretary to the Dean

GENERAL INFORMATION

ORGANIZATION AND PURPOSE

Northeastern University School of Law was established in 1898. Among its original incorporators were Judge James R. Dunbar, James Barr Ames, then Dean of the Harvard Law School, and Samuel Bennett, at that time Dean of the Boston University School of Law. Later, such men as Ezra Thayer, Dean of the Harvard Law School, Samuel Elder, and Robert G. Dodge have been active upon the Corporation of the School and have been instrumental in shaping its policies and aiding in its development.

The purpose of the School is the preparation of men and women for the active practice of the law, particularly in Massachusetts and the other New England states. The faculty is chosen with this purpose in mind. In addition to the full-time teachers, outstanding leaders in the profession and noted specialists in particular fields of the law not only give special lectures but also many of the courses. The School in this manner relates the work of the classroom as closely as possible to the profession. Instruction is based upon the case method, which combines the study of basic principles with the analysis and interpretation of decided cases.

ACCREDITATION

Northeastern University School of Law fully meets all requirements as to legal education of the American Bar Association and is upon the approved list of that body.

The School has also been approved by the Board of Regents of the State of New York and is provisionally approved by the Association of American Law Schools.

LOCATION

Located at 47 Mt. Vernon Street, Boston, the Law School is near the State House and the Court House, where the Supreme Judicial Court, the Superior Court of Suffolk County, the Land Court, the Probate Court for Suffolk County, and the Municipal Court for the City of Boston are housed. It is within a few minutes' walk of the business center of the city and from the Park Street subway station. The Law School Building provides well-equipped classrooms, an extensive Law Library, reading areas, conference rooms, and administrative and instruction offices.

LIBRARY

The Law School Library contains more than 16,000 volumes and is steadily growing. It is so arranged as to give the student direct access to the

books in the stacks as well as in the reading room. The library contains many of the State Reports, the complete National Reporter System, the Federal Reports, and the Reports of the Supreme Court of the United States, the English Reports, Dominion Law Reports, English and American Digests, various State Digests and Statutes, and an extensive collection of encyclopedias, annotations, treatises, legal periodicals, approved textbooks, and all current casebooks.

EDUCATIONAL PROGRAMS

DAY AND EVENING DIVISIONS

The Law School is divided into two divisions — the Day Division and the Evening Division. The same curriculum is offered in each Division, and the standards of work and requirements for graduation are the same. A minimum of eighty-four semester hours of classroom instruction is required for the degree of Bachelor of Laws.

The completion of the course of study in the Day Division requires that students devote substantially all of their working hours to their law studies. The evening program is designed for those who are regularly employed during the day and can attend only the evening sessions of the School.

ACCELERATED PROGRAM

For the continuance of the war and thereafter so long as may be deemed necessary, the School will operate on a program accelerated by the addition of a summer term. In both the day and evening divisions, because of the accelerated program, the school year is divided into three equal terms of sixteen weeks each. Students may enter at the beginning of any term. For the opening dates see calendar, page 2.

RETURNING VETERANS

Men and women who have served in the armed services of the United States or of any of the Allied Nations may be admitted to the School of Law under the plan hereafter outlined:

- (a) The Faculty recognizes the difficulties of the returning veteran whose law school program was interrupted by entrance into the armed forces in reorienting himself to the study of law. Accordingly, those veterans who have successfully completed any portion of their law studies at this School or at any other accredited law school may enter at any time, even in the middle of a term. Attendance until the beginning of the following term will not count toward degree credit, but will be solely for the purpose of aiding the student in regaining his capacity to resume his law school program successfully. In subsequent terms the student will pursue his studies for degree credit.
- (b) Those veterans who have not previously studied law in an accredited school, but who are qualified for admission, may enter at the beginning of any term.

COMBINED PROGRAMS

Students in the College of Liberal Arts and the College of Business Administration of Northeastern University are allowed in their senior year to elect courses in the Law School in lieu of the regular senior programs of these colleges.

Upon the completion of the semester hour equivalent of the senior year requirement through courses in the Law School, they become eligible for the degree of Bachelor of Arts or of Bachelor of Science according to the curriculum in which they have qualified. Upon the completion of their law studies, they become eligible for the degree of Bachelor of Laws.

These combined programs shorten the time required to obtain both degrees and also the time required to qualify for admission to the practice.

PRELEGAL PROGRAM

Students desiring to study law but who have not completed at least one-half the work required for a Bachelor's degree in an accredited college should write to or consult the Director of Admissions for Northeastern University, whose office is located in Richards Hall, 360 Huntington Avenue.

The College of Liberal Arts of Northeastern University conducts both day and evening prelegal programs which prepare adequately for admission to the Law School.

REQUIREMENTS FOR THE DEGREE

The degree of Bachelor of Laws will be conferred upon those candidates who are of good moral character and who:

- (1) Have pursued in residence the study of law for the required period of time and have completed the program of study prescribed by the Faculty.
- (2) Have passed examinations in at least eighty-four semester hours of required courses and have attained a minimum weighted average of sixty-seven per cent.

In recognition of superior scholarship, the degree will be granted with special honors, as follows:

Cum Laude. To students who have met all the requirements for the degree and have attained a weighted grade average of eighty-five per cent to ninety per cent.

Magna Cum Laude. To students who have met all the requirements for the degree and have attained a weighted grade average of ninety per cent or better.

ADMISSION OF STUDENTS

Entering students will be admitted to the Fall Term, beginning on September 17, 1945; to the Winter Term, beginning on January 21, 1946; and to the Summer Term, beginning on May 20, 1946.

I. Requirements for admission

A. Candidates for the degree of Bachelor of Laws (LL.B.).

1. Men and women eighteen years of age or over who have completed at least one-half of the work required for an acceptable college degree at an accredited college and attained records therein which meet the standards set by the Committee on Administration will be admitted as candidates for this degree.
2. Students in the College of Liberal Arts and the College of Business Administration of Northeastern University who have elected the first year of the law course as their senior year may in this way obtain both the degrees of Bachelor of Arts or Science and Bachelor of Laws.

3. Students entering with advanced standing —

A student transferring from any law school approved by the American Bar Association who has maintained a satisfactory academic record may be admitted to advanced standing on such terms and conditions as the Committee on Administration may prescribe. Transcripts showing both college and law school work must be submitted with the application. Successful completion in residence of at least one full academic year of study is required for the degree. An applicant who has been denied readmission in another law school will not be admitted to this School.

B. Special Students

A limited number of applicants, who are at least twenty-three years of age and who cannot qualify under the foregoing requirements for admission as candidates for the degree of Bachelor of Laws, may, in exceptional cases and at the discretion of the Faculty, be admitted as special students. Applicants for admission as special students must give evidence of such general education and experience as will enable them to carry on and profit by the work of the School.

II. Readmission

Former students are readmitted only at the discretion of the Faculty and must upon their return to the School meet the degree requirements in force at the time of their re-entry. The Faculty reserves the right to refuse admission or readmission to any applicant.

III. Application for admission

All applications for admission should be made as early as possible *before the beginning of the term*.

- A. Each applicant for admission to the School should secure from the Dean's office an application form, which should be filled out and returned to that office, together with the application fee of \$5. Checks or money orders should be made payable to Northeastern University.
- B. The completed application form should be accompanied or followed by an official transcript from each college attended by the applicant, which transcript should give a complete record of the college work done to date.

IV. Registration

Every student is required to register in person and arrange for the payment of tuition at that time. It is urgently requested that each entering student register *before* the opening of the term. The filing of an application does not constitute registration.

TUITION AND FEES

APPLICATION FEE \$ 5.00

Each student is required to pay an application fee when he first enters the University. It is payable but once and is not refundable.

TUITION PER TERM (*Day Division*) \$140.00

The tuition in the Day Division is based on a schedule of fourteen hours of class work each week for a term of sixteen weeks, payable in two equal installments.

TUITION PER TERM (*Evening Division*) \$105.00

The tuition in the Evening Division is based on a schedule of ten and one-half hours per week for a term of sixteen weeks, payable in two equal installments.

TUITION PER SEMESTER HOUR	\$ 10.00
The tuition charge for students carrying less than, or more than, a full program is at the rate of \$10 each semester hour. The minimum tuition fee for any student for less than a full program of study is \$25 each term.	
SPECIAL EXAMINATION FEE	\$ 10.00
LIBRARY FEE (<i>each term</i>)	\$ 2.00
DEFERRED PAYMENT FEE	\$ 2.00
The deferred payment fee will be added to all bills which are not paid when due. Failure to make the required payments on time, or to arrange for such payments, is considered sufficient cause to bar the student from classes until the matter has been adjusted with the Dean.	
GRADUATION FEE	\$ 10.00
This fee is payable thirty days before the student is to be recommended for the degree.	

SCHOLARSHIPS AND PRIZES

A limited number of scholarships for part of the annual tuition have been established for upper-class students. These scholarships are awarded under the direction of the Dean to applicants who are deserving and needy, and who have maintained a satisfactory record in their law studies for at least one academic year.

Alumni have generously made available the following five tuition scholarships of \$100 each in honor of former distinguished members of the Faculty of the School:

ARTHUR A. BALLANTINE	JUDGE HUGH D. McLELLAN
ELIAS FIELD	OSCAR STORER
	JUDGE JOHN V. SPALDING

These scholarships are awarded to first-year students on the basis of their academic record for the first term and promise of future success.

Daniel J. Dowd Scholarship. This scholarship, in the principal sum of \$1,000.00, is the gift of a friend of the Law School in memory of a worthy citizen of the State of Vermont. The income from this fund is available to provide a tuition scholarship for such worthy and needy student as the Dean of the School of Law shall select, preference being given to (1) residents of Windsor County, Vermont, (2) residents of the State of Vermont, and (3) other students.

Phi Epsilon Nu Sorority Prize. The Phi Epsilon Nu Sorority will present a Law Dictionary to the Junior woman student, in the Day or Evening Division, who attained the highest scholastic average in the second year class while carrying a full program of study.

REGULATIONS

GENERAL POLICY

The School reserves the right to cancel any course if registration for it does not justify continuance.

The School also reserves the right, at any time, to make any changes which are deemed advisable in the number and content of courses, their order in the curriculum, and in the rules, regulations and fees of the School.

Attendance at the University is a privilege and not a right. The Committee on Administration reserves the right to require at any time the withdrawal of any student whom it may deem unworthy either on account of his neglect of study, his incapacity for the law or for any grave defect of conduct or character, and no reason for requiring such withdrawal need be given.

WITHDRAWALS

In the event a student is obliged to withdraw from the School for causes deemed adequate by the Committee on Administration, a refund of the unused tuition may be granted provided the application for withdrawal, together with the request for refund, and supporting data, are filed within forty-five days after the student has ceased attendance.

ATTENDANCE

Students are expected to attend with regularity the sessions of all courses in which they are enrolled. Students who are irregular in class attendance without justifiable cause may be dropped from the class rolls or be refused permission to take the final examinations in the course. No student during his attendance at the Law School may be registered in any other school or college, whether of Northeastern University or of any other institution, without the consent of the Dean.

MARKING SYSTEM

A — 90-100	Superior attainment
B — 80-89	Above average attainment
C — 70-79	Average achievement
D — 60-69	Lowest passing grade
F — Failure	Failure to be removed as the Faculty shall determine
Inc.	Postponed examination

COURSES OF INSTRUCTION

REQUIRED COURSES

First Year

Agency: Cr. 2 Semester Hours

Rights and liabilities arising out of the relation of principal and agent and master and servant. Seavey, Cases on Agency.

Contracts: Cr. 6 Semester Hours

Rights and duties arising from promises; requisites for formation of contracts; performance and discharge of contracts; contracts for benefit of third persons; assignments. Shepherd's Revision, Costigan's Cases on Contracts, 4th ed.

Criminal Law: Cr. 4 Semester Hours

A preliminary study of the administration of criminal justice with special reference to characteristics of particular crimes and the general principles of liability to punishment. Casebook to be announced.

Personal Property: Cr. 2 Semester Hours

A study of property in chattels, application of the concepts of possession and title in the law of personal property; finding; bailment; lien; transfer of chattels by gift; sale and miscellaneous *inter vivos* transactions; emblements and fixtures. The cases on Personal Property are used to present the substantive law of that subject and to illustrate various philosophies of the law. Aigler, Bigelow and Powell, Cases on Property, Vol. 1.

Pleading and Practice I: Cr. 3 Semester Hours

A study of the judicial process. Consideration of the substantive and adjective characteristics of each of the common-law remedies; the relation between remedial and substantive law; proceedings in an action at law; the different modes in which remedies developed at law and in equity; proceedings in a suit in equity; distinctions between actions and suits. Magill and Chadbourn, Cases on Civil Procedure, 3d ed.

Torts: Cr. 6 Semester Hours

Liability in damages for injuries to person and property inflicted intentionally, negligently or innocently; justification and excuse; contributory negligence; proximate cause. Liability for false representations, defamation, inducing breach of contract, interference with business relations, unfair competition, strikes, etc. The measure of damages in tort cases. Thurston & Seavey, Cases on Torts.

Upper Classes

Administrative Law: Cr. 3 Semester Hours

Issues involved in transferring power to the administrative agency. Right to notice and hearing before the administrative body acts. Adequacy of notice. What constitutes a fair hearing; representation by counsel; testimony under oath; rules of evidence; opportunity to cross-examine and rebut; unbiased tribunal; necessity of findings. Methods of obtaining judicial review of administrative action. Scope of judicial control over administrative action. Gellhorn, *Administrative Law Cases and Comments*.

Bills and Notes: Cr. 3 Semester Hours

The law of bills of exchange, promissory notes and checks with special reference to the Negotiable Instruments Law. Campbell, *Cases on Bills and Notes*.

Business Associations: Cr. 5 Semester Hours

Adaptability of conventional forms of organization to the purposes of the business enterprise. Organization and structure of joint ventures, partnerships, joint stock associations, business trusts, and corporations with relation to allocation of control and risk, and limitation of liability. Duties and rights in property of enterprisers, with remedies for protection and enforcement. Dissolution of the solvent unit. Ballantine and Lattin, *Cases on Private Corporations*.

Conflict of Laws: Cr. 4 Semester Hours

Nature of jurisdiction; executive, legislative, and judicial jurisdiction; problems of domicil and situs for purposes of jurisdiction. Recognition and enforcement of rights created in other jurisdictions. Cheatham, Dowling, Goodrich and Griswold, *Cases on Conflict of Laws*.

Constitutional Law: Cr. 3 Semester Hours

A general study of the judicial process; scope of, and limitations upon, governmental action — due process, equal protection, police power, taxation, eminent domain; the federal system — scope of federal and state powers, jurisdiction to tax, intrastate and interstate commerce. Dowling, *Cases on Constitutional Law*, 2d ed.

Creditors' Rights: Cr. 2 Semester Hours

Enforcement of judgments; fraudulent conveyances; assignments for the benefit of creditors; receivership; bankruptcy. Hanna and McLaughlin, *Cases on Creditors' Rights*, 3d ed.

Damages: Cr. 2 Semester Hours

Rules and standards applicable to the law of damages; interest, expenses of litigation, certainty, avoidable consequences. Exemplary damages. Mitigation of damages. Liquidated damages. Damages in tort and contract actions. Procedural aspects of the assessment of damages. Crane, Cases on Damages, 2d ed.

Equity: Cr. 5 Semester Hours

Origin and history of the jurisdiction of the Court of Chancery; nature, enforcement and effect of equitable decrees; a brief study of specific enforcement of contract, injunctions against tort and crime, and other forms of equitable relief. McClintock, Cases on Equity.

Evidence: Cr. 5 Semester Hours

The rules of evidence developed in the courts of common law and under the statutes, arranged under the topics — judicial notice, examination of witnesses, privilege and competency, illegally obtained evidence, remote and prejudicial evidence, opinion testimony, hearsay rule and its exceptions, best evidence rule, parol evidence rule, burden of proof and presumptions, judge and jury. Morgan and Maguire, Cases on Evidence, 2d ed.

Insurance: Cr. 2 Semester Hours

Nature and form of the insurance contract and its interpretation and application with respect to various kinds of insurance. Vance, Cases on Insurance, 2d ed.

International Law: Cr. 3 Semester Hours

Sources and sanctions of international law; recognition; intervention, jurisdiction, nationality, protection of citizens abroad, diplomatic and consular practice, the interpretation of treaties; enemy property and enemy nationals in the territory of the other belligerent; the effect of war on litigants, agencies, commercial relations and contracts involving parties who have become enemies; enemy business domicile and enemy status of corporations; the effect of action taken by the occupier of occupied territory and that of action taken by governments in exile in the same territory; the requisition of commodities and ships by governments; private property — the nationality of private property captured or destroyed at sea and the insurance adjustments involved; neutrality, its obligations and rights, prize courts, and the adjudication of the various interests in the subject matter of the prize. Scott's Cases on International Law.

Labor Law: Cr. 2 Semester Hours

A study of problems relating to labor organizations and collective bargaining, including legality of labor tactics at common law and under the antitrust laws; remedies of employers in labor disputes under Federal and State anti-injunction statutes; enforcement of collective contracts; collective bargaining, mediation, and arbitration under the National Labor Relations Act, Railway Labor Act, and State Statutes. Casebook to be announced.

Landlord and Tenant: Cr. 3 Semester Hours

This course considers the rights and duties of landlord and tenant as an incident of the relationship form, and also as regulated by the terms of an expressed lease. The legal consequences of various covenants found in leases of farm, business, and residential property will be included in the study. Attention will be given to the creation of the tenancy, legal aspects of its operation, and methods of termination and enforcement. Jacob's Cases on Landlord and Tenant, 2d ed.

Legislation: Cr. 2 Semester Hours

History and place of various types of legislation in the development of law; a study of the matters contained in legislative law making, such as the nature and extent of legislative power, formulation of legislative policy, legislative organization and procedure, sources and forms of written law, mechanics of enactment; relation of the legislative process to the making of law; means of making laws effective; various types of legislation and the elements of statutory interpretation.

Mortgages: Cr. 2 Semester Hours

Form, substance, and elements of the mortgage; position of mortgagee and mortgagor; transfer of the mortgaged interest; priority and marshaling. Campbell, Cases on Mortgages, 2d ed.

Pleading and Practice II: Cr. 3 Semester Hours

Courts; jurisdiction; venue; process; service; return; entry of actions; pleadings; motions; interrogatories; trial; verdict; judgment; appellate practice.

Property I: Cr. 3 Semester Hours

Historical introduction to real property with a detailed consideration of the modern law of possessory estates in land, including the fee simple, the fee tail, the life estate, the estate for years, concurrent estates, the history and significance of the Statute of Uses, and the incidents of possessory

ownership relative to water, lateral and subjacent support, and air. Aigler, Bigelow and Powell, Cases on Property, Vols. I and II.

Property II: Cr. 4 Semester Hours

The running of covenants, easements and profits, licenses; the Acquisition of Title, adverse possession and prescription; problems of conveyancing; modes of conveyance; execution of deeds, the subject matter, creation of easements by implication, covenants for title, estoppel by deed, and priorities. Aigler, Bigelow and Powell, Vol. II, Cases on Property.

Property III: Cr. 3 Semester Hours

Classification of future interests; construction of limitations; powers, rule against perpetuities; illegal conditions and restraints. Simes, Cases on Future Interests.

Sales: Cr. 3 Semester Hours

Transfer of interests in personal property by agreement; rights and remedies of the seller, buyer, and third persons; Statute of Frauds. Vold Cases on Sales.

Taxation: Cr. 2 Semester Hours

Financing government through property, estate, inheritance, and gift taxes. Something of the procedure of state property tax collection, taxpayers' remedies, and detailed statutory problems, as well as jurisdiction, purpose, and subject of taxation. Treasury Department, Regulations 79 (Gift Tax); Regulations 80 (Estate Tax). Magill and Maguire, Cases on Taxation (2d ed.), and supplementary material.

Trusts: Cr. 4 Semester Hours

The creation, administration and termination of express trusts; charitable trusts; resulting and constructive trusts. Scott, Cases on Trusts, 3d ed.

Wills: Cr. 3 Semester Hours

The rationale of succession; descent and distribution; the making and revoking of wills; some problems of construction, including the use of extrinsic evidence in aid of construction; grant of probate and administration, and the administration and final settlement of estates. Costigan, Cases on Wills and Administration, 3d ed.

DEGREES AWARDED — JUNE, 1945**BACHELOR OF LAWS**

ELTON T. BARRETT

CHARLES EVANS TAYLOR

KATHLEEN THERESE RYAN

VAHEN PHILIP TORIGIAN

STUDENT BODY, 1944-1945

AUDETTE, ACHILLES

KELLEY, GEORGE E.

BEESON, EUNICE WADHAMS

KENNEDY, JACQUELINE AGNES

BELMONT, MARIE A.

KOORKANIAN, ELIZABETH

BERKOWITZ, HYMAN SAMUEL

LANE, ARNOLD STERLING

BLOCH, ARNOLD HAROLD

LEONARD, MARGERY C.

BOWDOIN, EVERETT SEAVEY

LIDDY, CARL

BOYD, ROBERT BURNS

McLAUGHLIN, EDWARD FRANCIS, JR.

CAREY, MARIE PRISCILLA

McMACKIN, JOHN FRANCIS XAVIER

CASE, EDWARD EARL

McSHARRY, THOMAS FRANCIS

CHAREST, PETER PAUL

MANNING, LEE

CHRISTENSEN, ORLAND M.

MARSHALL, ARTHUR MURRAY

CONGDON, NEWTON WINFIELD

MOODY, LEROY STEPHEN

CORBETT, GRAFTON JOSEPH, JR.

MORSE, CHARLES WILLIAM

CUCINOTTA, JOHN VICTOR

NOBLE, STANLEY D.

DANA, LESTER HAROLD

NOLAN, JOHN SIMON

DEERY, JAMES FRANCIS

O'CONNOR, JOHN PAUL

DONNA, JOHN JOSEPH

O'NEIL, PAULINE ANNE

DOWELL, MARION RICHARD

O'Rourke, LESLIE E. LINUS

FARMER, E. CAPEN

PARSONS, RUTH ISABEL

FAY, MARTIN FRANCIS

PATERSON, STANLEY CHARLES

FRENCH, PALMER DONALDSON

PEARLMAN, SHELLEY A.

FRIER, GEORGE WILSON

PIERCE, JOHN PATRICK

GILBERT, ALAN DEAN

PRICE, GEORGE WILLIAM

GLEASON, JAMES A.

REED, JAMES ALLAN

GRAHAM, JOHN JOSEPH

REID, ROBERT FULLER

GUNN, TOWNSEND MacNICOL

RICHMOND, MILTON

HANNA, RUTH JANE

SCHWARTZ, MAURICE

HARRIGAN, EDWARD DIMOND

SCHWEITZER, HOWARD

HICKEY, JOHN CHRISTY

SMOLKER, IRVING MELVIN

HOFF, MAUD SANDERSON

SWANSON, ARTHUR WILSON

HURLBUT, RONALD

TOOHEY, JOHN JOSEPH

HURLEY, WARREN ARTHUR

TRITLE, EDWARD MILTON

IANNECIELLO, ANTHONY PAUL

VAN DER WALDE, LUDWIG

JACKS', STANLEY MARTIN

WHITMORE, WILLIAM DAVIE, 3RD

KELLEY, ELLIOT G.

WILKINSON, S. FRANCES

NORTHEASTERN UNIVERSITY
School of Law

47 MT. VERNON STREET, BOSTON 8, MASSACHUSETTS

Application for Admission

Date 19 . .

Name (*Print in full*)

Address Telephone

Date of Birth Place of Birth

Citizen of

Colleges or Universities attended

Length of attendance (specify years by date)

Where situated If a graduate, what degree

Have you ever made application to any other Law School?

Have you ever been in attendance, dropped, suspended or expelled from any college or

Law School?

If the answer is Yes, attach a full statement of facts.

If you have been a student in any other school of the Northeastern University system give

name of school and years in which you were in attendance.

Name and address of employer

Telephone

Have you ever been complained of, indicted for or convicted of any violation of the law?

If so, attach a full statement of facts.

All statements made by me in this application are true and complete to the best of my

knowledge and belief.

SIGNED

GENERAL INSTRUCTIONS

A fee of five dollars must accompany this application. Make checks, money orders or drafts payable to Northeastern University. (This fee is not refundable.)

Attach a transcript of your college record. (If transcript will not be issued to you, arrange to have it sent to this School direct.)

Attach to this application at least two letters addressed to the Dean by persons not members of applicant's family (preferably his employer and the Dean or some teacher of his school or college) testifying to applicant's intelligence, industry and good character.

If you have studied law at another school, whether or not you claim credit, also attach hereto an official certificate of work done there, showing subjects, hours and grades.

NORTHEASTERN UNIVERSITY

Coeducational

College of Liberal Arts

Offers a broad program of college subjects serving as a foundation for the understanding of modern culture, social relations, and technical achievement. Varied opportunities available for vocational specialization. Degree: Bachelor of Science or Bachelor of Arts.

College of Engineering

Offers curricula in Civil, Mechanical (with Industrial and Aeronautical options), Electrical and Chemical Engineering. Classroom study is supplemented by experiment and research in well-equipped laboratories. Degree: Bachelor of Science in the professional field of specialization.

College of Business Administration

Offers curricula in Accounting, Marketing and Advertising and Industrial Administration. Each curriculum represents in itself a broad survey of business technique, differing from the others chiefly in emphasis. Degree: Bachelor of Science in Business Administration.

School of Law

Offers day and evening undergraduate programs admitting those who present a minimum of one-half of the work accepted for a bachelor's degree in an approved college or its full equivalent, each program leading to the degree of Bachelor of Laws.

School of Business

Offers curricula through evening classes leading to the degree of Bachelor of Business Administration with appropriate specification in Accounting, Management and Engineering and Business. Preparation for C.P.A. examinations. Intensive programs arranged to meet special needs.

Evening Courses of the College of Liberal Arts

Certain courses of the College of Liberal Arts are offered during evening hours in the fields of Economics, English, History, Government, Psychology and Sociology. A special program preparing for admission to the School of Law is also available. The program is equivalent in hours to one-half the requirement for the A.B. or S.B. degree. Special courses also available. Degree of Associate in Arts conferred.

The Colleges of Liberal Arts, Engineering, and Business Administration offer day programs and are conducted on the cooperative plan. After the freshman year students may alternate their periods of study with periods of work in the employ of business or industrial concerns. Under this plan they gain valuable experience and earn a large part of their college expenses. Full time curricula are available for students who do not desire the cooperative plan.

In addition to the above schools the University has affiliated with it and conducts: the Lincoln Technical Institute, offering, through evening classes, courses of college grade in various fields of engineering leading to the degree of Associate in Engineering; and the Lincoln Preparatory School, an accredited evening school preparing for college entrance and offering other standard high school programs.

For further information regarding any of the above schools, address

**NORTHEASTERN UNIVERSITY
BOSTON, MASSACHUSETTS**

School of Law

47 MT. VERNON STREET

Telephone KENmore 5800

Other Schools

360 HUNTINGTON AVENUE

NORTHEASTERN UNIVERSITY
BOSTON - MASSACHUSETTS



SCHOOL OF BUSINESS

1945-1946
EVENING SESSIONS
THIRTY-EIGHTH YEAR

Office Hours

JUNE 11, 1945 — AUGUST 10, 1945

Monday and Tuesday 8:45 A.M.—9:00 P.M.

Wednesday—Friday 8:45 A.M.—5:00 P.M.

AUGUST 12, 1945 — JUNE 8, 1946

Monday — Friday 8:45 A.M.—9:00 P.M.

Saturdays, 8:45 A.M.—12:00 Noon through August 25.

8:45 A.M.—4:00 P.M. Month of September.

8:45 A.M.—1:00 P.M. October 6, 1945 — June 8, 1946.

Gifts and Bequests

Northeastern University will welcome gifts and bequests for the following purposes:

- (a) For its building program.
- (b) For general endowment.
- (c) For specific purposes which may especially appeal to the donor.

It is suggested that, when possible, those contemplating gifts or bequests confer with the President of the University regarding the University's needs before legal papers are drawn.

Gifts and bequests should be made only in the University's legal name, which is "Northeastern University."

Address Communications to

NORTHEASTERN UNIVERSITY SCHOOL OF BUSINESS

360 HUNTINGTON AVENUE, BOSTON 15, MASS.

TELEPHONE: KENMORE 5800

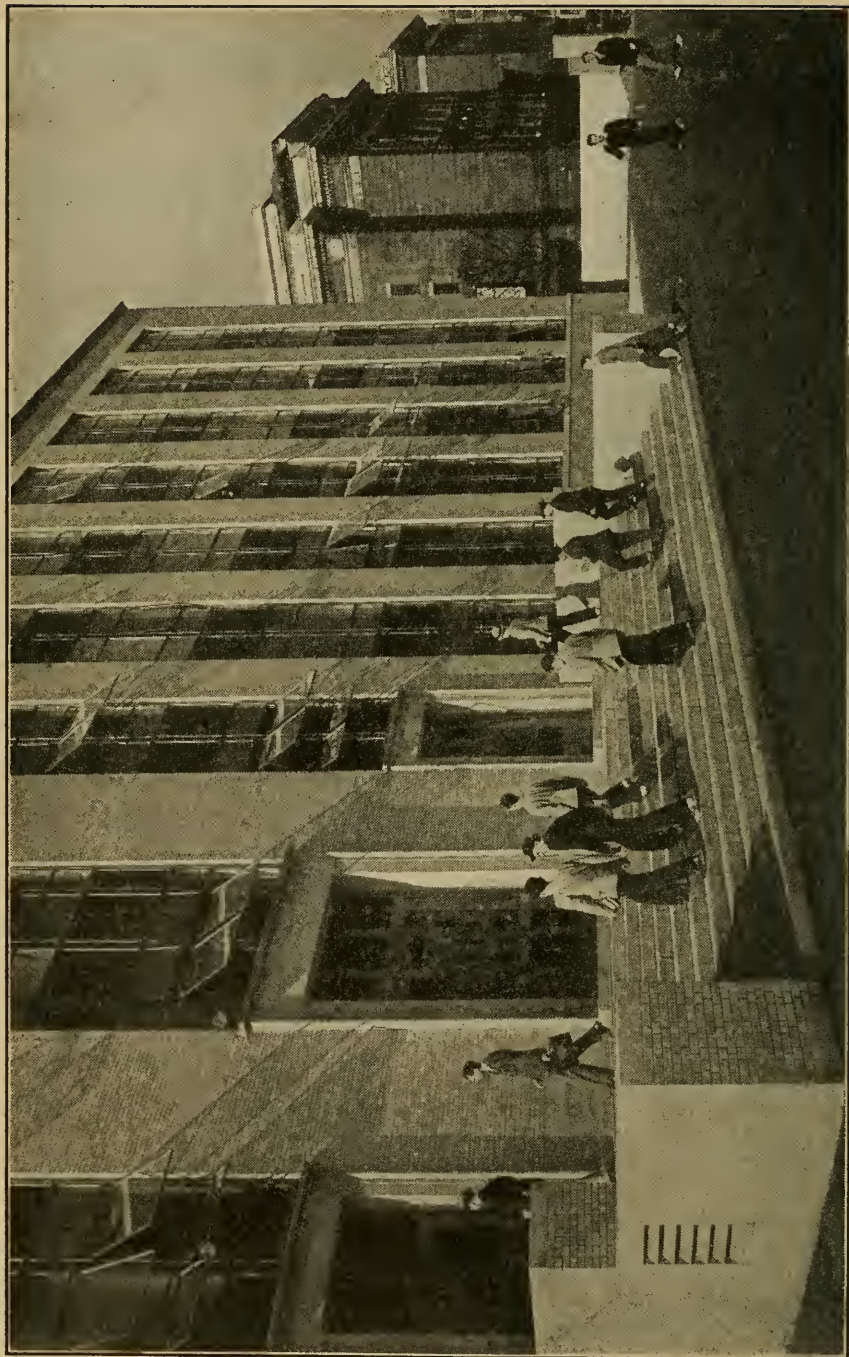
NORTHEASTERN UNIVERSITY
EVENING DIVISION
SCHOOL OF BUSINESS



38th Year
1945-1946

[The University is located at
the entrance to the Huntington
Avenue subway within nine
minutes of Park Street and
easily accessible from all points.]

A DISTINCTIVE SCHOOL OF BUSINESS
*providing opportunities for men and women to receive advanced training
in Business during convenient Evening Hours*



ENTRANCE TO RICHARDS HALL, NORTHEASTERN UNIVERSITY

School of Business

Calendar

1945

July	1	Students may register for the school year 1945-1946 any time after July 1. Registration must be completed before attending classes.
September	4-7	Examinations for Removal of Conditions and Advanced Standing in Boston and Springfield.
September	10-14	Upper classes begin.* English 7, 8 Reports due.
September	17-21	Freshmen classes begin.*
October	12	Legal holiday (no classes).
November	22	Thanksgiving Day — Legal Holiday (no classes).
December	21	Last class session before Christmas recess.

1946

January	2	First class session after Christmas recess.
January	7-25	Second semester classes begin.
February	22	Legal holiday (no classes).
March	15	Last date for the submission of theses.
April	19	Legal holiday (no classes).
May	1	Last date for filing application for degrees and for the payment of the graduation fee.
May	6-24	Final examination period. Commencement Exercises (date to be announced).

*Students must register before attending classes. See page 36 for late registration.

Class sessions which fall on holidays are made up at the end of the course or as announced.

Table of Contents

	<i>Page</i>
Northeastern University, General Statement	12
Administrative Organization	5-6
Purpose and Program	12
Location	14
School of Business	
Calendar of Evening Sessions	3
The Background of an Institution	15
PURPOSE, POLICY, METHODS OF INSTRUCTION	15
VOCATIONAL GUIDANCE	17
SUCCESS OF ALUMNI	15
PLACEMENT SERVICE	17
Administrative Organization	7
Staff of Instruction	8-11
Programs of Instruction	18
ACCOUNTING	19-20
MANAGEMENT	21-23
ENGINEERING AND BUSINESS	24
LABOR RELATIONS INSTITUTE	25
BUREAU OF BUSINESS AND INDUSTRIAL SERVICE	26-27
SPECIAL PROGRAMS AND SINGLE COURSES	27
Description of Courses	28
ACCOUNTING	28-29
BUSINESS READINGS	31
DISTRIBUTION	30
ENGLISH	30-31
ECONOMICS	31-32
LAW	32
MANAGEMENT	32-34
THESIS	34
OCCUPATIONAL EXPERIENCE	34
Administrative Policies	35
ADMISSION REQUIREMENTS	35
REGISTRATION	36
ATTENDANCE	37
EXAMINATIONS	37
MARKS AND CREDITS	38
SCHOLARSHIPS AND AWARDS	39-40
General Information	41
CLASSROOMS, TEXTBOOKS, RECREATION	41
STUDENT COUNCIL	41
Tuition and Other Fees	42-43
Withdrawals and Refunds	44

Northeastern University

Administrative Organization

The Northeastern University Corporation

ROBERT GRAY DODGE
Chairman

FRANK LINCOLN RICHARDSON
Vice-Chairman

CARL STEPHENS ELL
President of the University

HENRY NATHANIEL ANDREWS
Treasurer

EVERETT AVERY CHURCHILL
Secretary

JOSEPH FLORENCE ABBOTT
CHARLES FRANCIS ADAMS
WILMAN EDWARD ADAMS
ROGER AMORY
ARTHUR ATWOOD BALLANTINE
GEORGE LOUIS BARNES
THOMAS PRINCE BEAL
FARWELL GREGG BEMIS
SAMUEL BRUCE BLACK
HENRY GODDARD BRADLEE
GEORGE AUGUSTUS BURNHAM
GODFREY LOWELL CABOT
PAUL CODMAN CABOT
WALTER CHANNING
WILLIAM CONVERSE CHICK
PAUL FOSTER CLARK
WILLIAM H. COLLINS
SEARS B. CONDIT
ALBERT MORTON CREIGHTON
EDWARD DANA
EDWARD DANE
JUSTIN WHITLOCK DART
WILLIAM JAMES DAVIDSON
BERNARD W. DOYLE
PAUL AUGUSTUS DRAPER
DAVID FRANK EDWARDS
WILLIAM PARTRIDGE ELLISON
JOSEPH BUELL ELY
ROBERT GREENOUGH EMERSON
JOHN WELLS FARLEY
ALLAN FORBES
ERNEST BIGELOW FREEMAN
FRANKLIN WILE GANSE
HARVEY DOW GIBSON
MERRILL GRISWOLD
GEORGE HANSEN
HENRY INGRAHAM HARRIMAN
CARROLL SHERLOCK HARVEY
HARVEY P. HOOD
CHANDLER HOVEY
WESTON HOWLAND
HOWARD MUNSON HUBBARD
MAYNARD HUTCHINSON
RAYMOND WINFIELD JAMES
ARTHUR STODDARD JOHNSON
CHARLES BERKLEY JOHNSON
JACOB JOSEPH KAPLAN

HARRY HAMILTON KERR
FRANK HOWARD LAHEY
HALFDAN LEE
GALEN DAVID LIGHT
EDWARD ABBOTT MACMASTER
JOHN RUSSELL MACOMBER
ALBERT EDWARD MARSHALL
HAROLD FRANCIS MASON
JAMES FRANKLIN McELWAIN
HUGH DEAN McLELLAN
IRWIN LIKELY MOORE
FRED LESTER MORGAN
IRVING EDWIN MOULTROP
CLARENCE LUCIAN NEWTON
SAMUEL NORWICH
OLAF OLSEN
AUGUSTIN HAMILTON PARKER, JR.
GEORGE EDWIN PIERCE
ROGER PIERCE
MATTHEW POROSKY
FREDERICK SANFORD PRATT
ROGER PRESTON
SIDNEY RABINOVITZ
STUART CRAIG RAND
WILLIAM McNEAR RAND
JAMES LORIN RICHARDS
HAROLD BOURS RICHMOND
CHARLES FOREST RITTENHOUSE
JOHN JAMES ROBINSON
ROBERT BILLINGS RUGG
LEVERETT SALTONSTALL
RUSSELL MARYLAND SANDERS
ANDREW SEBASTIAN SEILER
FRANK PALMER SPEARE
RUSSELL HENRY STAFFORD
FRANCIS ROBERT CARNEGIE STEELE
CHARLES STETSON
EARL PLACE STEVENSON
ROBERT TREAT PAINE STORER
FRANK HORACE STUART
EDWARD WATSON SUPPLE
RALPH EMERSON THOMPSON
JAMES VINCENT TONER
ELIOT WADSWORTH
EUSTIS WALCOTT
EDWIN SIBLEY WEBSTER
SINCLAIR WEEKS

Northeastern University

General University Committees

Executive Council

CARL STEPHENS ELL, *Chairman*

EVERETT AVERY CHURCHILL
ALBERT ELLSWORTH EVERETT

MILTON JOHN SCHLAGENHAUF
WILLIAM CROMBIE WHITE

University Cabinet

CARL STEPHENS ELL, *Chairman*

EVERETT AVERY CHURCHILL
ALBERT ELLSWORTH EVERETT
ROGER STANTON HAMILTON
CHARLES WILLIAM HAVICE
WILFRED STANLEY LAKE
JAMES WALLACE LEES
HAROLD WESLEY MELVIN

WINTHROP ELIOT NIGHTINGALE
RUDOLF OSCAR OBERG
EDWARD SNOW PARSONS
JOHN BUTLER PUGSLEY
MILTON JOHN SCHLAGENHAUF
J. KENNETH STEVENSON
WILLIAM CROMBIE WHITE

STUART MEAD WRIGHT

Library Committee

EVERETT AVERY CHURCHILL, *Chairman*

ALBERT ELLSWORTH EVERETT
ROGER STANTON HAMILTON

WILFRED STANLEY LAKE
MYRA WHITE

WILLIAM CROMBIE WHITE

School of Business

Administrative Organization

General Officers of Administration

CARL STEPHENS ELL, A.B., M.S., Ed.M., Sc.D., *President of the University*
FRANK PALMER SPEARE, M.H., LL.D., *President Emeritus of the University*
EVERETT AVERY CHURCHILL, A.B., Ed.D., *Vice-President of the University*
ALBERT ELLSWORTH EVERETT, S.B., M.B.A., *Dean of the School of Business*

Local Officers of Administration

BOSTON

ALBERT ELLSWORTH EVERETT, S.B., M.B.A., *Dean*
J. KENNETH STEVENSON, B.C.S., *Assistant to the Vice-President*
MILTON JOHN SCHLAGENHAUF, A.B., B.D., M.A., *Director of Admissions*
RUDOLF OSCAR OBERG, S.B., Ed.M., *Director of Alumni Relations*
DAISY MILNE EVERETT, *Bursar*
MYRA WHITE, *Librarian*
MARY B. FOOR, *Manager of the Bookstore*

SPRINGFIELD DIVISION

JOHN DOANE CHURCHILL, A.B., A.M., *Director*
EARL HENRY PAINE, B.C.S., *Treasurer*
GUY DOLPHUS MILLER, A.B., Ed.M., C.P.A., *Associate Dean*

Office Staff

MABEL ELLEN BEAN, *Bookkeeper*
RUTH C. BODEMER, B.S., *Assistant Librarian*
ALICE RIAMA CRAWFORD, A.B., *Assistant Librarian*
ALICE MARIE FRAZER, *Stenographer*
ELEANOR FLORENCE GALE, *Cashier, Central Offices*
ELIZABETH HARRIETT HOWARD, *Statistical Clerk, Central Offices*
DOROTHY MILNE MURRAY, *Secretary to the Dean*
RUTH EVERETT NEWELL, *Purchasing Clerk, Central Offices*
ELIN VICTORIA PETERSON, *Secretary to the Vice-President*
CAROLINE FRANCES PETTINGELL, *Assistant Bursar*
MARJORIE GRAFFTE PROUT, A.B., *Secretary to the President*
JEAN SIMONDS, *Assistant Librarian*
PRISCILLA SHEPARD, *Secretary to the President*
HELEN MARGARET STODDARD, *Recorder*
BEATRICE EMMA TOURTILLOTT, *Bookkeeper, Central Offices*
HAZEL M. YOUNG, *Bookkeeper, Central Offices*

School of Business

**Staff of Instruction*

Boston

FREDERICK MORSE BASSETT, B.C.S., Northeastern University; C.P.A.
Constructive Accounting
Accountant, Stewart, Watts and Bollong

ELLIOT SHEFFELD BOARDMAN, Bowdoin College; M.B.A., Harvard University
Business Administration Seminar, Business Planning and Research
Manager, Industrial Statistics Division, Federal Reserve Bank of Boston

CHARLES ALBERT CEDERBERG, Boston University
Introductory Accounting, Intermediate Accounting
Instructor in Bookkeeping, Boston Clerical School

ALFRED D'ALESSANDRO, B.C.S., LL.B., Northeastern University; M.B.A., Boston University;
Harvard University; C.P.A.
C.P.A. Problems
Professor of Accounting, Northeastern University

RAYMOND FRANK DAUER, A.B., Indiana University
Industrial Management Problems and Policies
Production Manager, General Electric Company

JOHN ENNEGUESS, B.C.S., B.B.A., Northeastern University; Harvard University
Accounting Problems
Chairman, Department of Accounting, Worcester Junior College; Income Tax Specialist,
Harry W. Wallis

LEO THOMAS FOSTER, A.B., A.M., Holy Cross College; Harvard University; Boston University
Income Tax Procedure
Head of Tax Department, Charles F. Rittenhouse and Company

HOWARD EATON GORTON, B.S., Hobart College; M.B.A., Harvard University
Marketing
Merchandise Manager, Dennison Manufacturing Company

HOWARD FRANCIS GREENE, Northwestern University; C.P.A.
Advanced Accounting Problems, Auditing
Accountant, John P. Darmody and Company

J. KEENE HORNER, B.A., University of Oklahoma; M.B.A., Harvard University
Public Speaking; Business Reports and Conferences; Financial Organization Counsellor, Business Readings and Theses
Director, Division of Finance, Babson Institute

KENNETH RENNER JOHNSON, B.S., Iowa State College; M.B.A., Harvard University
Principles of Production
Head, Production Control Department, Raytheon Production Corporation

ROGER JOHNSON, B.S., Bowdoin College; M.B.A., Harvard University
Business Statistics and Forecasting, Government Controls in Business
Regional Business Consultant, U. S. Department of Commerce

HARRY OLINS, A.B., LL.B., Harvard University
Legal Aspects of Business, Trade Regulation
Attorney at Law

ANDREW PETERSEN, B.B.A., M.B.A., Boston University; C.P.A.
Accounting Aids to Management
Charles F. Rittenhouse and Company

*The Faculty for the year 1945-46 is published during the summer.

- WYMAN S. RANDALL, B.B.A., Boston University
Purchasing
 Purchasing Agent, Rust Craft Publishers, Inc.
- FREDERICK L. ROBINSON, B.S., University of New Hampshire
Principles of Selling, Sales Management
 Staff Assistant, Merchandise Development Division, Dennison Manufacturing Company
- IRWIN SPEAR, Ph.B., University of Vermont
Principles of Advertising, Retail Store Advertising
 Advertising Service
- BENJAMIN F. STACEY, A.B., Dartmouth College; M.C.S., The Amos Tuck School
Business Economics
 Recruiting Representative, U. S. Civil Service Commission
- HARRY WILBUR THOMPSON
Credits and Collections
 Credit Manager, General Sea Foods Corporation
- LAWTON WOLF, B.B.A., Rider College
Principles of Production
 Production Manager, Holtzer-Cabot Electric Company

Springfield Division

- INGHAM CHAMBERLAIN BAKER, A.B., Dartmouth College; The Amos Tuck School
Marketing
 Director and Assistant Treasurer, G. & C. Merriam Company
- ERNEST ADOLPH BERG, B.C.S., LL.B., Northeastern University; C.P.A.
Advanced Accounting Problems
 Partner, Hitchcock & Co., Accountants; Attorney at Law
- REGINALD NELSON BLOMFIELD, A.B., Williams College
Advanced Algebra, Trigonometry
 Personnel Department, Massachusetts Mutual Life Insurance Company
- DAVID HOLBROOK BROWN, A.B., Middlebury College; LL.B., Boston University; A.M.,
 Trinity College
Business Economics; Financial Organization; Economic Development of the U. S.
 Instructor, Classical High School
- CLARENCE IRVING CHATTO, A.B., Bates College; A.M., Harvard University
Advanced English, Public Speaking
 Curriculum Specialist, Springfield Public Schools
- CARL ODLIN CHAUNCEY, LL.B., Northeastern University
Legal Aspects of Business
 Member of Legal Staff, Farm Credit Administration of Springfield; Attorney at Law
- CLIFFORD SCHOLES CODY, B.S., Iowa State College
Heat Engineering
 Member of Engineering Staff, Westinghouse Electric and Manufacturing Company
- TIMOTHY DAVID CRIMMINS, B.S., Worcester Polytechnic Institute
Mechanics
 Engineer, Palmer Plant, Wickwire Spencer Corporation
- ALEXANDER DUNCAN DAVIS, B.T.E., Lowell Textile Institute
Engineering Drawing
 Instructor, Technical High School
- LEONARD COLERICK FLOWERS, B.S., M.S., Carnegie Institute of Technology
Physics
 Member of Engineering Staff, Westinghouse Electric and Manufacturing Company

NELSON HAYWARD FOLEY, Boston University

Industrial Management Problems and Policies

Member of Staff, Scovell, Wellington and Company

MOTT ABRAM GARLOCK, B.S., Dartmouth College; M.B.A., Harvard University

Business and Industrial Management

Security Analyst, Massachusetts Mutual Life Insurance Company

EDWARD PHELPS GRACE, B.C.S., Northeastern University; C.P.A.

Accounting Aids to Management, Accounting Problems

Assistant General Manager, Springfield Merchants, Inc.

CLARENCE MORTIMER HALL, B.S., M.S., Worcester Polytechnic Institute

Electricity

Instructor, Classical High School

WILLIAM OTTO HENSCHKE, B.S., Cooper Union Institute of Technology

Advanced Engineering Drawing

Member of Engineering Staff, American Bosch Corporation

FRANK YAEGER HESS, S.B., Harvard College

Chemistry

Instructor, Classical High School

GEORGE WRIGHT HOWE, A.B., M.B.A., Harvard University

Business Administration Seminar, Business Planning and Research

Treasurer, Century Manufacturing Co.

FRED WOODING HUTCHINSON, B.S., Wesleyan University; Boston University

Analytic Geometry, Calculus

Instructor, Technical High School

CYRUS WALTER JONES, S.B., Harvard College

Business English

Instructor, Technical High School

GUSTAV HENRY KOCH, M.E., Rensselaer Polytechnic Institute

Strength of Materials

Engineering Staff, Westinghouse Electric and Manufacturing Company

GUY DOLPHUS MILLER, A.B., Ohio University; University of Wisconsin School of Law;

Harvard Graduate School of Business Administration; Ed.M., Harvard University;

C.P.A.

Business Reports and Conferences; Counsellor to Students including Theses and Business Readings

Instructor, Technical High School

JOHN HAYNES MILLER, A.B., Washington and Jefferson College

Business Statistics and Forecasting

Vice-President and Actuary, Monarch Life Insurance Company

FREDERICK CHAPIN OBER, A.B., Harvard University

Credits and Collections

Assistant Treasurer, Springfield Five Cent Savings Bank

HALDIMAND SUMNER PUTNAM, JR., B.S., Syracuse University

Intermediate Accounting

Accountant, Scovell, Wellington and Company

HORACE JACOBS RICE, B.S., Wesleyan University; LL.B., Harvard University

Government Controls in Business

Attorney at Law

JAMES THOBURN SMITH, B.C.S., Northeastern University

Income Tax Procedure

Assistant Trust Officer, Union Trust Company of Springfield

- LELAND WILLIAM SMITH, A.B., Harvard College; A.M., Columbia University
Advanced Algebra, Trigonometry
Instructor, Classical High School and Springfield Junior College
- LOYD HAGEN STANTON, Northeastern University; Bentley School of Accounting and Finance
Cost Accounting
Assistant Treasurer, Van Norman Company
- ELO CARL TANNER, B.M.E., University of Minnesota; University of Pittsburgh
Design
Refrigeration Development and Design Engineer, Westinghouse Electric and Manufacturing Company
- GILBERT CREIGHTON WALKER, A.B., Ed.M., Harvard University; Northeastern University
Introductory Accounting
Instructor, High School of Commerce
- ERNEST WIESLE, Ph.B., A.M., B.D., Ph.D., University of Chicago
Psychology for Business and Industry
Professor, Springfield College
- ELIOT LELAND WIGHT, B.A., Yale College; University of Colorado, Graduate School
Advertising Principles; Advertising Campaigns; Principles of Selling; Sales Management
Advertising Manager, United States Envelope Company
- PAUL ALMY WILKS, A.B., Harvard College
Business English
Chief Accountant, Strathmore Paper Company, on leave of absence for military service
as Major, United States Ordnance Department, assigned to Hartford Ordnance District

Northeastern University

General Statement

NORTHEASTERN UNIVERSITY is incorporated as a philanthropic institution under the General Laws of Massachusetts. The State Legislature, by special enactment, has given the University general degree granting powers.

The Corporation of Northeastern University consists of men who occupy responsible positions in business and the professions. This Corporation elects from its membership a Board of Trustees in whom the control of the institution is vested. The Board of Trustees has four standing committees: (a) an Executive Committee which serves as an Ad Interim Committee between the regular meetings of the Board of Trustees and has general supervision of the financial and educational policies of the University; (b) a Committee on Buildings which has general supervision over the building needs of the University; (c) a Committee on Funds and Investments which has the responsibility of administering the funds of the University; (d) a Development Committee which is concerned with furthering the development plans of the University.

Founded in 1898, Northeastern University, from the outset, had as its dominant purpose the discovery of human and social needs and the meeting of these needs in distinctive and highly serviceable ways. While subscribing to the most progressive educational thought and practice, the University has not duplicated the programs of other institutions but has sought "to bring education more directly into the service of human needs."

With respect to program, Northeastern has limited itself:

- To offering, in its several schools, basic curricula from which non-essentials have been eliminated;
- To effective teaching;
- To advising and guiding students;
- To giving students the chance to build well-rounded personalities through a balanced program of extracurricular activities.

The Northeastern Plan of Education is especially designed for the student who must earn while he learns. In the main, it consists of two definite types of education:

- Co-operative Education by Day,
- Adult Education by Night.

The plan has been developed in such a way that experience in jobs with pay is utilized to help students of limited financial resources secure an education and at the same time gain the maximum educational benefit from their practical experience. So far as the New England States are concerned, Northeastern University is the only institution whose day colleges, other than the School of Law, are conducted under the Co-operative Plan.

The several schools and programs of the University are conducted either under the name "Northeastern University" or by its affiliated schools — the Lincoln Schools, and The Huntington Day School for Boys. The following is a brief outline of the principal types of educational opportunities offered.

In the field of Co-operative Education there are three day colleges — the College of Liberal Arts, the College of Engineering, and the College of Business Administration. The College of Liberal Arts offers majors in the usual fields of the arts and the sciences leading to the degrees of Bachelor of Arts and Bachelor of Science. The College of Engineering, one of the largest engineering colleges in the United States, has curricula in Civil, Mechanical (with Industrial and Aeronautical options), Electrical, and Chemical Engineering. The College of Business Administration has curricula in Accounting, Marketing and Advertising, and Industrial Administration. The College of Engineering and the College of Business Administration confer the degree of Bachelor of Science with specification indicating the field of specialization. The Co-operative Plan, under which all of these day colleges operate, enables the student to alternate regular periods of classroom instruction with supervised employment in an industrial or commercial position, thus combining theory and practice in an exceedingly effective manner. Apart from the educational advantages of the Co-operative Plan is the opportunity for self-support while the student is pursuing his studies at Northeastern University. During the co-operative periods, students not only gain experience but are also paid for their services. Approximately three hundred business and industrial concerns co-operate with Northeastern University in making this program effective.

The School of Law conducts both a day and an evening undergraduate program which prepares for admission to the bar and for the practice of the law and leads to the degree of Bachelor of Laws.

The Adult Education Program has been developed in the evening work of the School of Law as indicated above, in the School of Business, and in the evening courses of the College of Liberal Arts. The School of Business has curricula in Management, Accounting, and Engineering and Business. This School awards the Bachelor of Business Administration degree with specification. The University also operates a division of the School of Business in Springfield. The College of Liberal Arts offers certain of its courses during evening hours constituting a program, three years in length, equivalent in hours to one-half the requirements for the A.B. or S.B. degree, and providing a general education and preparation for admission to the School of Law. The title of Associate in Arts is conferred upon those who complete this program.

The Adult Education Program has also been developed through the Lincoln Schools, which are affiliated with and conducted by Northeastern University. The classes in these schools are held at convenient evening hours. The Lincoln Technical Institute offers curricula upon a college level in various phases of engineering leading to the title of Associate in Engineering; whereas the Lincoln Preparatory School, accredited by the New England College Admissions Board, prepares students for admission to college and offers other standard high school programs.

The Huntington Day School for Boys, also affiliated with and conducted by Northeastern University, is the outgrowth of a demand in the city of

Boston for an urban preparatory school with high educational standards which would furnish thorough preparation for admission to the leading colleges and universities. While easily accessible to the various sections of Boston and to the suburbs, it has the facilities of a country day school and offers a country day school program. This School is one of the leading preparatory schools of the country.

Location of University Buildings

Northeastern University is located in Boston, a city which is rich in educational and cultural opportunities. The School of Business is in the University center on Huntington Avenue just beyond Massachusetts Avenue at the entrance to the Huntington Avenue Subway. The School is easily reached from the various railroad stations and from all points of the Boston Elevated System. Ample parking space is available in the rear of Richards Hall.

Richards Hall

Richards Hall, a four-story building at 360 Huntington Avenue, contains over one hundred thousand square feet of floor space devoted to administrative and instructional purposes. On the first floor are the general administrative offices of the University. The University Bookstore, the "Husky Hut" and the student checkroom are located on the ground floor. On the various floors are three large lecture halls and numerous classrooms and laboratories. The offices of the Evening Division are located on the first floor.

New Building

This building contains forty-two thousand square feet of floor space. Here are located the Chemical Engineering and Biological laboratories, a large commons room open to day and evening students, and eighteen classrooms and lecture halls.

East Building

This building contains the University library, classrooms, and certain laboratories.

South Building

The South Building of the University contains certain laboratories, a large lecture hall, and several classrooms.

Beacon Hill Building

The Beacon Hill Building, now occupied exclusively by the School of Law, is located at 47 Mt. Vernon Street, within sight of the State House, and contains administrative offices, a library, classrooms, student lounges, and other facilities.

School of Business

The Background of an Institution

THIRTY-SEVEN YEARS ago, in March of 1907, the first undergraduate evening school of business in New England was organized. This was the beginning of Northeastern University School of Business, a pioneer endeavor to bridge an existing gap in business and professional education. Four years later, the School was authorized by the Massachusetts Legislature to grant university degrees to its graduates.

Administrative Policy

The School of Business was founded to serve those who have only evening hours free for study — a special field, limited to the education of the person who has permanently left day school and gone to work. The Northeastern University evening student is an adult, usually more mature than the student of a day school. He is in direct touch with business and is expected to take an active part in his own supervised training. The constant effort of the administrative and teaching staff is toward more effective means of suiting their educational service to the individual evening student.

Purpose

Now, just as at the start, the School seeks first to determine what business needs in its personnel, and then to supply properly trained men and women who can fulfill those needs.

The training of a student at Northeastern has always been conducted so that a graduate receives not only a B.B.A. degree, but an immediately applicable vocational training equipping him to fill a better position in some one business activity. For his future, he has the advantage of a thorough background of business methods and an appreciation of the problems of management, which, if properly used, may lead to advancement and executive responsibilities.

Staff of Instruction

The teaching staff of the School in Boston and Springfield is recruited from business and professional leaders of New England business. The instructors are college-trained men who have proved their ability in their various fields of specialization. They are selected on the basis of their ability to convey knowledge to others in an interesting, inspiring, and effective manner. They are also chosen for the breadth of their training and experience.

Success of the Alumni

The best indication of the cumulative rewards to be won by pursuing a systematic program of study in spare evening hours is to be found in the records of Northeastern School of Business Alumni.

A study made just prior to the war covering all Boston graduates conclusively shows that better positions and increased incomes are directly traceable to the evening hours spent in preparation at Northeastern.

A portion of this study is the comparison of positions held by the alumni when they entered the School as freshmen with the positions they held at the time of the study.

ALUMNI POSITIONS

	Upon Entrance	Date of Study
	%	%
Presidents and Other Corporation Officers	0.0	3.8
Owners of Business	1.0	13.1
Treasurers and Comptrollers	0.3	7.7
Accountants	7.0	16.9
Office Managers	1.6	7.4
Department Managers	2.9	11.5
Salesmen	3.8	3.8
Educators	8.6	7.0
Government Employees	2.6	7.7
Bookkeepers	18.8	1.3
Clerks	34.2	6.4
Factory Workers	5.8	2.2
Unemployed	2.9	1.9
Miscellaneous	10.5	9.3

This pronounced trend to better and more responsible positions is further substantiated by a study of the income of the same alumni group over the same period.

It was found that the alumni who had been out of the School of Business not more than ten years had increased their income an aggregate of 73.2%. For those who graduated more than ten years ago, this increase amounts to 223.6%. Another study of the income of students still in school shows that the average School of Business student begins his advancement in business and in income even while he is still at his training. On the average, the increase in income during the period of attendance more than covers tuition charges.

The Student Body

The character of a student body determines the standards which a school can maintain. Nothing is more essential to the success of an educational institution than a careful selection of incoming students. This principle applies just as readily to an evening school as to a day school. Standards are invariably adjusted to the average intelligence of the students. For this reason, Northeastern University School of Business maintains standards of admission which result in a student body capable of pursuing work of standard college grade during evening hours.

The student body consists of 383 men and women of widely varied ages and occupations. The youngest student is 17 years of age and the oldest 53 years. The average age is 23 years.

About one-sixth of the students are married men who have realized that if they are to increase their earning power they must fit themselves for advancement. That the training offered by the School has enabled the students to improve their earning capacities and enlarge their responsibilities is conclusively proved by a study which showed that students in the School substantially increased their incomes in the six-year period between entering the School and graduation.

Placement Service

For Graduates

While the School cannot guarantee positions to its graduates, the number of requests for men usually exceeds the number available in the graduating class of any given year. The policy of the School is to find the best equipped and qualified men and women among its graduates for the positions which the School is called upon to fill.

The School in recommending a graduate for a position furnishes the prospective employer with the facts as to the graduate's ability, character, attitudes, habits, and other qualifications for the position as revealed by the School records. In the last analysis, however, placement in a position depends quite largely upon the graduate's ability to sell his services to the prospective employer. Most employers prefer to consider two or more candidates for a position and generally request the School to suggest more than one person. Many manufacturing and commercial firms throughout New England call upon this School to assist them in filling important executive and managerial positions.

No charge is made for placement service.

For Students

Many requests from employers are received by the School, during normal times, for young men and women of potential ability to fill important clerical and junior executive positions. It is the policy of the School to serve the students whenever possible by placing them in those positions which promise attractive opportunities for development and advancement. The School, however, cannot guarantee to place its students, but it does endeavor to keep in close touch with those who desire placement service and to assist them in obtaining satisfactory advancements in positions and income. No charge is made for placement service. Those needing this assistance should file an application at the School Office.

School of Business

Programs of Instruction

THE SCHOOL OF BUSINESS provides the following major programs of instruction for undergraduate students:

Accounting

1. A specialized four-year program leading to the title of Associate in Accounting.
2. A six-year program leading to the degree of Bachelor of Business Administration in Accounting. (See page 20.)

Management

Four- and six-year programs with opportunity for specialization in one of the following fields:

Business and Industrial Management
Distribution

The four-year programs lead to the title of Associate in Business Administration and the six-year programs to the degree of Bachelor of Business Administration in Management. (See page 22.)

Engineering and Business

A six-year program combining the study of engineering and business, leading to the degree of Bachelor of Business Administration in Engineering and Management. (See page 24.)

Special Programs

The School will arrange special one-year, two-year, or longer programs of study to meet the needs of individual students. These special programs will be arranged upon consultation with the Dean. (See page 27.)

Single or Unit Courses

Northeastern University sponsors through the Bureau of Business and Industrial Service courses designed to meet specific needs of persons employed in business and industry. Many of them are designed to supplement basic courses of study in undergraduate programs. Students in degree programs desiring to take any of these courses for credit must receive prior approval of the Dean. See page 26 for special courses to be offered in the fall term of 1945.

Accounting

The Accounting Profession

Taxation, legal requirements governing qualifications for listing in the stock market, corporation laws governing the preparation of financial reports, the needs of government, and many other developments in the conduct of business have broadened the scope of accounting to such a degree that in normal times the supply of trained accountants is not adequate to meet the demand. Moreover, a knowledge of accounting is universally regarded as essential in all phases of business management. There is a large field of public accounting which is being developed and, with the increased emphasis which financial institutions are placing upon accounting, the need for college-trained Certified Public Accountants is increasing every year.

Opportunities in the field of accounting are many. Financial returns compare favorably with those of other professions such as law, medicine, and engineering. The normal development for those employed by an accounting firm is fairly well standardized from the position of junior assistant through that of the senior accountant into firm membership. As a firm member, the usual earnings range from \$4,000 to \$25,000 a year, and frequently even higher.

While the remuneration in the field of public accounting for properly trained men is attractive, the field of commercial and private accounting offers even more attractive inducement. The latest census figures show that there are 191,571 persons engaged as accountants and auditors in the United States. From trained accountants are selected many of the business and industrial executives, including office managers, comptrollers, treasurers, and other officers of business concerns. Salaries of treasurers and comptrollers vary from \$4,000 to \$15,000; office managers from \$3,000 to \$6,000; chief accountants from \$2,500 to \$5,000. Many senior accountants have advanced into responsible executive positions paying \$10,000 and more.

The Accounting Programs

Students of accounting in the School of Business may follow programs of training in this specialized subject which prepare them to take the examination for Certified Public Accountant (C.P.A.) or to carry on work of major responsibility in commercial accounting with private or public business firms.

Thoroughness of instruction is all-important. The trained accountant must be able to adapt himself quickly to the rapidly changing conditions of modern business. He should be ready to assume executive responsibility outside the field of accounting. This involves, of course, a background of understanding of various functions of business quite apart from the specialized accounting field. The shorter accounting program includes prescribed subjects for the title of Associate in Accounting and adequate preparation for the C.P.A. examination.

Upon completion of the four years of prescribed subjects for the title of Associate in Accounting, students may take two years of additional study required for the degree of Bachelor of Business Administration. These two additional years are greatly to the advantage of the student, since they give an opportunity to study managerial and administrative subjects which fit him to assume responsibility outside of the accounting field, and give him the basic understanding of business at large, which is of vital importance to accountants who hope to make real progress.

*Requirements for B.B.A. Degree in Accounting***Six-year Program**

<i>Course Numbers*</i>	<i>Subjects</i>	<i>Semester Hours</i>
A 1-2	Introductory Accounting	5
A 3-4	Intermediate Accounting	5
A 7-8	Accounting Problems	5
A 9-10	Cost Accounting	5
A 11	Auditing	2½
A 13-14	Income Tax Procedure	5
A 15	Constructive Accounting	2½
A 17-18	Advanced Accounting Problems	5
A 19-20	C.P.A. Problems	5
E 1-2	Business English	5
E 5	Public Speaking	2½
E 6	Business Reports and Conferences	2½
E 7, 8	Business Readings or T 3-4, Thesis	5
Ec 1-2	Business Economics	5
Ec 3-4	Financial Organization	5
Ec 7-8	Business Statistics and Forecasting	5
L 1-2	Legal Aspects of Business	5
M 7-8	Credits and Collections	5
M 11-12	Governmental Controls in Business	5
	Occupational Experience	30
	Electives (To be selected subject to approval)	10
	Total Semester Hours Required for Degree	125

*Requirements for Title of Associate in Accounting***Four-year Program**

<i>Course Numbers*</i>	<i>Subjects</i>	<i>Semester Hours</i>
A 1-2	Introductory Accounting	5
A 3-4	Intermediate Accounting	5
A 7-8	Accounting Problems	5
A 9-10	Cost Accounting	5
A 11	Auditing	2½
A 13-14	Income Tax Procedure	5
A 15	Constructive Accounting	2½
A 17-18	Advanced Accounting Problems	5
A 19-20	C.P.A. Problems	5
E 1-2	Business English	5
Ec 1-2	Business Economics	5
Ec 3-4	Financial Organization	5
L 1-2	Legal Aspects of Business (C.P.A. Law)	5
	Total Semester Hours Required for Title	60

*See notes at bottom of page 27.

Business and Industrial Management Programs

The School of Business offers two optional curricula under the Management Program.

1. Business and Industrial Management

This program of courses comprises an integrated series of courses covering the fundamental manufacturing processes, industrial organization, relation of product design to the market, production processes and methods of production planning and control, motion and time study and related topics. This program is designed to provide training for managerial responsibility in commercial and industrial enterprises requiring a technical knowledge of management problems combined with a business background.

2. Distribution

Due to the increasing complexity of our national and international economy the distribution of our resources of both natural and manufactured commodities will occupy a position of increasing importance. The program is developed around the study of markets and marketing problems including the methods of selling and sales management, merchandising principles and practices, advertising, with sufficient background courses in business and industrial management to tie in with the production phases of the problems. It also includes the legal aspects, the growing government control of business, and allied topics. This program provides basic instruction for those looking forward to managerial responsibility in one of the several phases of this important field.

A recent extensive study of occupational opportunities shows that most college men who enter work in distribution, industry, transportation, and banking become involved sooner or later in some function of operating management where they become responsible for the direction of human effort within their organization.

In each of these optional curricula there is offered a six-year program leading to the degree of Bachelor of Business Administration in Management and also a special four-year program leading to the title of Associate in Business Administration.

Requirements for the B.B.A. Degree in Management
(Business and Industrial Management Option)

Six-year Program

Course Numbers*	Subjects	Semester Hours
A 5-6	Accounting Aids to Management**	5
D 1-2	Marketing	5
D 3	Principles of Selling	2½
D 4	Sales Management	2½
E 1-2	Business English	5
E 5	Public Speaking	2½
E 6	Business Reports and Conferences	2½
Ec 1-2	Business Economics	5
Ec 3-4	Financial Organization	5
L 1-2	Legal Aspects of Business	5
M 1-2	Business and Industrial Management	5
M 3	Principles of Production	2½
M 4	Scientific Management	2½
M 5	Psychology for Business and Industry	2½
M 6	Purchasing	2½
M 9-10	Industrial Management Problems and Policies	5
E 7, 8	Business Readings or T 3-4, Thesis	5
Ec 7-8	Business Statistics and Forecasting	5
M 7-8	Credits and Collections	5
M 11-12	Government Controls in Business	5
M 17-18	Business Planning and Research	5
M 19-20	Business Administration Seminar	5
	Occupational Experience	30
	Electives (To be selected subject to approval)	5
	Total Semester Hours Required for Degree	125

Requirements for the Title of Associate in Business Management
(Business and Industrial Management Option)

Four-year Program

Course Numbers*	Subjects	Semester Hours
A 5-6	Accounting Aids to Management**	5
D 1-2	Marketing	5
D 3	Principles of Selling	2½
D 4	Sales Management	2½
E 1-2	Business English	5
E 5	Public Speaking	2½
E 6	Business Reports and Conferences	2½
Ec 1-2	Business Economics	5
Ec 3-4	Financial Organization	5
L 1-2	Legal Aspects of Business	5
M 1-2	Business and Industrial Management	5
M 3	Principles of Production	2½
M 4	Scientific Management	2½
M 5	Psychology for Business and Industry	2½
M 6	Purchasing	2½
M 9-10	Industrial Management Problems and Policies	5
	Total Semester Hours	60

*, **See notes at bottom of page 27.

Requirements for the B.B.A. Degree in Business Management
(Distribution Option)

Six-year Program

<i>Course Numbers*</i>	<i>Subjects</i>	<i>Semester Hours</i>
M 1-2	Business and Industrial Management	5
D 1-2	Marketing	5
E 1-2	Business English	5
Ec 1-2	Business Economics	5
A 5-6	Accounting Aids to Management	5
D 5	Principles of Advertising (1)	2½
D 6	Retail Store Advertising (2)	2½
Ec 3-4	Financial Organization	5
M 6	Purchasing	2½
M 5	Psychology for Business and Industry	2½
D 7	Retail Store Management	5
L 1-2	Legal Aspects of Business	5
E 5	Public Speaking	2½
E 6	Business Reports and Conferences	2½
D 3	Principles of Selling	2½
D 4	Sales Management	2½
M 11-12	Government Controls in Business	5
M 17-18	Business Planning and Research	5
M 7-8	Credits and Collections	5
Ec 7-8	Business Statistics and Forecasting	5
M 19-20	Business Administration Seminar	5
E 7-8	Business Readings or T3-4, Thesis	5
	Occupational Experience	30
	Elective (To be selected subject to approval)	5
	Total Semester Hours Required for Degree	<u>125</u>

Requirements for the Title of Associate in Business Management
(Distribution Option)

Four-year Program

<i>Course Numbers*</i>	<i>Subjects</i>	<i>Semester Hours</i>
M 1-2	Business and Industrial Management	5
D 1-2	Marketing	5
E 1-2	Business English	5
Ec 1-2	Business Economics	5
A 5-6	Accounting Aids to Management	5
D 5	Principles of Advertising (1)	2½
D 6	Retail Store Advertising (2)	2½
Ec 3-4	Financial Organization	5
M 6	Purchasing	2½
M 5	Psychology for Business and Industry	2½
D 7	Retail Store Management	5
L 1-2	Legal Aspects of Business	5
E 5	Public Speaking	2½
E 6	Business Reports and Conferences	2½
D 3	Principles of Selling	2½
D 4	Sales Management	2½
	Total Semester Hours Required for Title	<u>60</u>

*See notes at bottom of page 27.

Engineering and Business Program

The Engineering and Business curriculum offers basic training by combining fundamental engineering and business courses in a six-year degree program. It provides reliable training for those now engaged in or who plan to enter positions of managerial responsibility in industrial or commercial enterprises where a scientific or engineering background is required.

Many technically trained men find it impossible to assume greater managerial responsibility because they do not have a knowledge of fundamental business principles so essential in many of the better positions in industry. On the other hand, many business trained men are employed in industrial plants where a scientific background is most desirable if not necessary for advancement. This program has been developed to serve both groups.

In Boston, the Engineering courses in this program are given under the auspices of an affiliated school of Northeastern University, the Lincoln Technical Institute, which offers several four-year curricula in Engineering leading to the title of Associate in Engineering. These curricula permit specialization in Chemistry, Civil and Structural Engineering, Electrical Engineering, Electronic, Industrial, and Mechanical Engineering with an Aeronautical option. The business courses are conducted by the School of Business which awards the degree of Bachelor of Business Administration in Engineering and Management.

The required business courses are largely in the field of industrial management and are designed to supplement the engineering work of the student. A careful study is made of the fundamental manufacturing processes, factory organization, production design, methods of production and production control, and time and motion study.

Students pursuing a program of engineering and business subjects ordinarily complete the work required for the title of Associate in Engineering before starting business study. The following minimum credits and courses are required to meet degree requirements.

Requirements for the Degree of Bachelor of Business Administration in Engineering and Management

Course Numbers*	Subjects	Semester Hours
	Lincoln Technical Institute courses	60
A 5-6	Accounting Aids to Management	5
E 6	Business Reports and Conferences	2½
E 7, 8	Business Readings or T 3-4, Thesis	5
Ec 1-2	Business Economics	5
M 1-2	Business and Industrial Management	5
M 3	Principles of Production	2½
M 4	Scientific Management	2½
M 6	Purchasing	2½
M 9-10	Industrial Management Problems and Policies	5
	Occupational Experience	30
	Total Semester Hours Required for Degree	125

Labor Relations Institute

The management of labor relations presents the most vital and challenging aspect of our industrial development of the immediate future. Continuance of our American way of industrial democracy demands a harmonious understanding of the underlying principles of labor and industrial management for the peaceful adjustment of their common problems.

The Labor Relations Institute of Northeastern University was organized to serve this need. It is dedicated to the service of both labor and management. It directly concerns the work of industrial and labor executives, plant managers, personnel directors, union shop councillors and stewards. Teachers in the fields of management and the social sciences will also find that the program provides a valuable academic background for their instruction.

Courses Common to Management and Labor

First Semester

Collective Bargaining—Industrial background and development in U. S.

Wage Administration — Job Analysis and Evaluation — Wage Payment Plans

Second Semester

Industrial Psychology

Government and Labor-Management Relations — State and Federal Laws and Agencies

Courses Particularly for Management

(From management's viewpoint)

Personnel Organization and Administration

Public Speaking and Conference Leadership

Contract Negotiation and Administration

Management Seminar

Courses Particularly for Labor

(From labor's viewpoint)

Union Organization and Administration

Public Speaking and Conference Leadership

Contract Negotiation and Administration

Labor Seminar

Students may register for the complete program or may take any one or more of the courses which serve their particular needs. A student may complete the entire program by attending two evenings per week for two years. Each individual course is one semester or sixteen weeks in length and carries two and one-half semester hours of credit for students qualified for the degree programs of Northeastern University Evening School of Business.

A diploma will be awarded to the student upon satisfactory completion of the program and a certificate upon completion of each individual course.

Those students registering for the certificate in the complete program will take the four courses common to management and labor and four additional courses from the management or labor group according to their choices.

The tuition charge is twenty-five dollars for registration in the first course and twenty-two dollars and fifty cents for each subsequent course in a continuous series or for students enrolled in a degree program of the Evening School of Business.

Bureau of Business and Industrial Service

Special Unit Courses

Northeastern University, through the Bureau of Business and Industrial Service, offers a program of unit courses especially designed to meet the individual needs of persons employed in business, industry or professional practice.

The courses included in the 1945-1946 Program to start in September, 1945, are as follows:

Management

Advanced Safety Engineering	Materials Control
Advanced Time Study	Methods Engineering
Advanced Methods Engineering	Personnel Administration
Alignment Charts	Production Planning and Control
Conference Leadership — A Man-	Quality Control by Statistical
agement Technique	Methods
Labor Relations — Collective Bar-	Sales Management
gaining	Sales Principles
Industrial Psychology	Time Study
Industrial Safety Engineering	Traffic Rates and Routing
Insurance Fundamentals	Wage Administration

Mechanical Engineering

Industrial Inspection	Practical Heat Treating
Metallurgy and Metallography	

Mathematics

Analytical Geometry	Differential Equations
Engineering Mathematics	Differential and Integral Calculus

Electronics

Advanced Industrial Electronics	Fundamentals of Radio II
Electronic Test Equipment and Meas-	Fundamentals of Electronics
urement	Industrial Electronics
Frequency Modulation and Tele-	Ultra-High Frequency Engineering I
vision	Ultra-High Frequency Engineering II
Fundamentals of Radio I	Servo-Mechanisms

Chemistry

Compounding and Processing of	Petroleum Technology
Natural and Synthetic Rubbers	Plastics
Rubber Technology	Synthetic Resins
Physical Chemistry	

Drafting

Engineering Drawing	Industrial Production	Illustrative
Designing for Quantity Production	Drawing	
	Machine Drawing	

Civil Engineering

Sanitary Bacteriology	Photogrammetry
-----------------------	----------------

Many of these courses will have credit in the degree programs of the School of Business and the Lincoln Technical Institute. All students wishing to take any of them for credit must secure prior approval from the Dean of the respective school.

A bulletin describing these courses and information regarding registration and tuition rates may be secured by writing to

The Bureau of Business and Industrial Service
 Northeastern University
 360 Huntington Avenue
 Boston 15, Mass.
 Tel. KENmore 5800

Special Programs and Single Courses

Special one-year, two-year, or longer programs may be arranged to meet the needs of any student who does not find in the regular programs offered by the School the type of training desired.

Such programs must be approved by the Dean and are made up only from courses offered in the Evening Division of the University.

Any course may be taken singly or in combination by those who have the necessary preliminary training to pursue with profit the course or courses selected.

Students should consult the schedules of courses offered in Boston and in Springfield for a list of available courses. Full credit may be allowed for any of these courses, if the student taking a special program desires to become a candidate for a degree or title, provided the courses he has pursued are a part of the degree or title program chosen.

*A double number, as M 1-2 or A 7-8, indicates a full-year course covering both the first and second semesters. A single course number, as A 11, indicates a half-year course covering only one semester. The letters indicate the classification of the course as: A, Accounting; D, Distribution; Ec, Economics; E, English; L, Law; M, Management.

**Students in the Management Program desiring more accounting than the single course of Accounting Aids to Management may elect both Introductory and Intermediate Accounting in lieu of Accounting Aids to Management. If Accounting Aids to Management is taken, Introductory and Intermediate Accounting cannot also be elected for credit, and vice versa.

School of Business

Description of Courses

THE UNIVERSITY reserves the right to withdraw, modify, or add to the courses offered, or to change the order of courses in curricula as may seem advisable.

The University further reserves the right to withdraw in any year any elective or special course for which less than twelve enrollments have been received. Regular students so affected by such withdrawal will be permitted to choose some other course. In the case of special students a full refund of all tuition and other fees will be made.

The University also reserves the right to change the requirements for graduation, tuition and fees charged, and other regulations. However, no change in tuition and fees at any time shall become effective until the school year following that in which it is announced.

All full-year courses are numbered with a double consecutive number and all half-year courses with a single number. The letter or letters immediately preceding the numbers indicate the classification of the course. The number of class sessions indicated for each course includes the final examination session. During the war period all full-year courses will have mid-year examinations and course credit will be granted on a semester basis.

ACCOUNTING (A)

Applicants for admission to the School who have had experience in accounting or bookkeeping or who have pursued systematic courses in institutions of less than college grade may take an examination for placement purposes in Introductory Accounting. Those who pass this examination will be admitted to Intermediate Accounting and may substitute an elective course in lieu of Introductory Accounting.

INTRODUCTORY ACCOUNTING

A 1-2 Thirty-three sessions; 5 hours' credit. No previous knowledge of bookkeeping or accounting necessary.

This course provides basic instruction for those who plan to specialize in accounting or for those who wish to enroll later for more advanced courses. Emphasis is placed upon proprietorship accounts, including books of entry, statements, business practices, adjustments, and an introduction to partnership accounts. Drill and practice work are required for proficient handling of simple accounting transactions.

INTERMEDIATE ACCOUNTING

A 3-4 Prerequisite: A 1-2, or the passing of a placement examination. Thirty-three sessions; 5 hours' credit.

A study of partnership accounting, including organization, dissolution, and liquidation of the partnership, emphasis being given to the corporate form of accounts with attention to manufacturing and trading activities. In addition to the drill and practice work on accounting technique, a mastery of basic principles of general accounting is required.

ACCOUNTING AIDS TO MANAGEMENT

A 5-6 Thirty-three sessions; 5 hours' credit. No previous knowledge of bookkeeping or accounting necessary.

A study of the broad background of accounting and business transactions so as to enable the student to analyze and interpret intelligently financial statements and other accounting reports. The course demonstrates the use of accounting in management and financial control. Emphasis is placed on the development of accounting fundamentals, preparation of financial

statements, corporation and manufacturing accounts, evaluation of balance sheet items, analysis and interpretation of financial statements and other trends, and the use of accounting as an aid to management.

ACCOUNTING PROBLEMS

A 7-8 Prerequisite: A 3-4 Thirty-three sessions; 5 hours' credit.

Develops power of analysis in utilizing accounting data. Problems are used as the basis for instruction and discussion to cover the more advanced phases of financial statements and accounts found in the more complex business organizations.

COST ACCOUNTING

A 9-10 Prerequisite: A 7-8 Thirty-three sessions; 5 hours' credit.

Acquaints the student with the relationship of cost accounting to management and administration control and shows how adequate cost systems may further the intelligent management of business enterprises. Numerous problems serve as the basis for a study of the various accounts, records, systems, and methods commonly used in modern cost accounting.

AUDITING

A 11 Prerequisite: A 7-8 Seventeen sessions; 2½ hours' credit.

Accounting facts and practices are analyzed to determine whether or not they conform to professional practice. The work of the auditor in relation to professional requirements, the mechanics of auditing, and the preparation of reports and certificates are studied.

INCOME TAX PROCEDURE

A 13-14 Prerequisite: A 3-4 Thirty-three sessions; 5 hours' credit.

A detailed study is made of Federal and State tax laws, their administration and application to the incomes of individuals, partnerships, corporations, and fiduciaries; treasury and tax department regulations and rulings; and of the decisions of the Board of Tax Appeals, and of various Federal and State courts. Practice in making out reports and returns, and a study of the procedure of handling claims form the basis of applied instruction.

CONSTRUCTIVE ACCOUNTING

A 15 Prerequisite: A 7-8 Seventeen sessions; 2½ hours' credit.

To acquaint students with the principles underlying the construction of accounting systems and the procedure of system installation. The course is developed by means of problem projects beginning with an analysis of the accounting needs of a small business. By gradual steps increasingly larger businesses are studied and accounting systems developed to meet their needs. Special attention is given accounting records in relation to the expansion of the accounting system.

ADVANCED ACCOUNTING PROBLEMS

A 17-18 Prerequisite: A 7-8 Thirty-three sessions; 5 hours' credit.

This course is designed primarily to meet the requirements of those students who intend to enter the accounting profession or to assume responsibilities in commercial accounting. Emphasis in this course is devoted to specialized problems in connection with consolidations, mergers, holding companies, and other more advanced and complicated accounting situations. The course thoroughly prepares the student for the C.P.A. Review in final preparation for the State C.P.A. and American Institute examinations.

C.P.A. PROBLEMS

A 19-20 Prerequisites: A 9-10; A 11; A 17-18; L 1-2 Thirty-three sessions; 5 hours' credit.

This course provides a thoroughgoing and complete review of accounting theory and practice, and is intended primarily for those who contemplate taking the C.P.A. examinations. Practice in the classroom is provided under substantially the same conditions as exist in the C.P.A. examination room. Carefully selected problems, taken from C.P.A. examinations, in Accounting Theory and Practice are worked out in the classroom, and are supplemented by lectures, demonstrations, and test questions.

DISTRIBUTION (D)

Marketing enters into and influences every field of business and includes not only the direct process of the sale of goods, but the whole organization by which goods find their way from the original producer to the ultimate consumer. The change in the economic structure during the past ten years, growing out of higher standards of living, the development of new occupational interests, and the shift of population to large cities, has tended to increase the cost of marketing of goods. Just as the elimination of waste in production was the keynote of business fifteen years ago, the reduction of expense and the introduction of more efficient methods in distribution are the foremost thought of business leaders today. For this reason courses in marketing form one of the basic elements in a business education.

MARKETING

D 1-2 Thirty-three sessions; 5 hours' credit.

An understanding of the various methods in common use for selling goods and of the typical problems that arise in the course of distributing goods from the manufacturer through the middlemen and dealers to the consumers is provided. The selling problems of the manufacturer, the wholesaler, the retailer, and the specialty agent are studied in relation to the various types of industries and commodities.

PRINCIPLES OF SELLING

D 3 Seventeen sessions; 2½ hours' credit.

This course deals with the evolution of modern salesmanship, its history, development, and opportunities. The psychology of selling, preparation for the interview, the proper approach, arousing the buying urge, the meeting of sales resistance, the closing of the sale, and the qualities of good salesmen are among the topics discussed.

SALES MANAGEMENT

D 4 Seventeen sessions; 2½ hours' credit.

This is a continuation of the course in the Principles of Selling. It includes study of the types of sales organizations, the work of sales executives, sales planning and policies, sales campaigns, management of the sales force, financing of sales, and the control of sales operations.

PRINCIPLES OF ADVERTISING

D 5 Seventeen sessions; 2½ hours' credit.

A comprehensive course designed to familiarize the student with the nature and scope of advertising and its place in the commercial and economic structure. History, definition, and functions of advertising. Organization and functions of advertising departments and advertising agencies. Varieties of advertising and media. Problems, market investigation, planning campaigns. Laws, ethics, and regulations. A study of the broader aspects of advertising with special emphasis on current trends and developments.

RETAIL STORE ADVERTISING

D 6 Seventeen sessions; 2½ hours' credit.

This course is devoted to the study of the elements of retail advertising. The various media used by retailers are considered with drill in the preparation of copy therefor. A study is made of institutional, straight merchandise, and sales copy as exemplified in current advertising of important retail concerns. The principles of layout receive attention as well as the mechanics of production including art work, plates, typography, and printing. The aim is to furnish a practical foundation fitting students for a creative career in retail advertising.

ENGLISH (E)

The value that comes from the effective use of good English in business reports and communications is being increasingly emphasized by business leaders. All students who are candidates for the degree or certificate are required to pursue systematic courses in English. Those having outstanding deficiencies may be required to take additional courses in English.

BUSINESS ENGLISH

E 1-2 Thirty-three sessions; 5 hours' credit.

Efficient training is provided in the use of correct and forceful English for business purposes. Practice in the construction of sales, collection, credit and application letters, business articles,

reports and newspaper stories provides opportunities for written expression on business topics. Study is devoted to the elements of logic as related to the organization and expression of thought. The course includes study of the fundamentals of sales promotion practice with special emphasis on buying motives. Oral work in class is intended to prepare students for participation in business conferences and public meetings.

ADVANCED ENGLISH

E 3-4 Prerequisite: E 1-2 or equivalent. Thirty-three sessions; 5 hours' credit.

Literature of value and interest to business men forms the basis of study and practice in writing so as to develop an effective, easy style of expression. The student acquires a cultural basis which will serve not only as a source of entertainment in leisure hours but also an aid for business communications.

PUBLIC SPEAKING

E 5 Seventeen sessions; 2½ hours' credit.

Those who wish to speak convincingly, to overcome self-consciousness, and to develop self-confidence will find this course meeting their needs. Students are trained in the selection and organization of speech materials, the delivery of the speech, and in other important essentials of effective speaking. The entire course is practical and not theoretical. Work is centered around the interests and topics of business men and is specifically adapted to their needs.

BUSINESS REPORTS AND CONFERENCES

E 6 Seventeen sessions; 2½ hours' credit.

This course is devoted to the preparation and presentation of business reports and to the techniques of planning for, participating in, and conducting business conferences. These reports and conferences are based upon business problems and situations. The nature of a thesis, the selection of a subject, the preparation of an outline, the collection and organization of data are considered in this course. Students are given the fullest possible opportunity to participate actively at each session.

BUSINESS READINGS

E 7 and E 8; 2½ hours' credit for each course.

The two courses in Business Readings are designed to broaden the student's acquaintance with selected writings in the field of business and to introduce him to the real pleasure and values that come from such reading. There are no required lectures for these courses, each of which carries two and one-half semester hours' credit and for which a charge of ten dollars is made.

At the beginning of the Upper Middler and the Junior years, each degree candidate registers for a Readings course and is furnished a list of titles from which he makes selections for readings in accordance with the course requirements. Written reports are submitted on these readings, and are due on or before registering for classes the following year.

ECONOMICS (Ec)

Economics is the basic foundation upon which the general principles of business as a science are founded. A mastery of the underlying economic laws enables the student to see clearly the forces which business men must use in arriving at solutions to their problems. An appreciation and understanding of economics is a necessary factor in the equipment of a progressive business man.

BUSINESS ECONOMICS

Ec 1-2 Thirty-three sessions; 5 hours' credit.

The characteristics of modern business and industry are studied in terms of their operations and relationship to the modern economic system. Economic laws and principles are considered in terms of business conditions peculiar to our own time and country and how these laws govern prices, wages of labor, profits, credit, competition, work and working conditions, and rewards for business enterprise.

FINANCIAL ORGANIZATION

Ec 3-4 Prerequisite: Ec 1-2 Thirty-three sessions; 5 hours' credit.

The functions and services of money and credit as mediums of exchange are discussed. A detailed study is made of the organization and functions of modern financial institutions such as commercial banks, trust companies, investment security houses, savings institutions, stock exchanges, the Federal Reserve System, and other credit and financial institutions.

INVESTMENT PRINCIPLES AND PRACTICE

Ec 5-6 Thirty-three sessions; 5 hours' credit.

Consideration is given to the determination of investment policies and to the analysis of various kinds of securities such as types of bonds, preferred and common stocks, and their place and use in the investment field. Attention is also given to the economic factors and changes as they affect investments.

BUSINESS STATISTICS AND FORECASTING

Ec 7-8 Prerequisite: Ec 1-2 Thirty-three sessions; 5 hours' credit.

The objective of this course is to train the student to use statistics in making better analyses of the business problems than is possible without statistics. The point of view of the business man and not the professional statistician is maintained throughout the study. In the early part of the course the emphasis is placed upon the necessary technical methods, using business problems as illustrations; in the second part of the course, the point of view is changed and the emphasis is placed upon solving practical problems, using statistical methods as tools when necessary. The practical application of statistics to business is directed toward business forecasting, business budgeting, production and labor, market analysis, investment and financial analyses, and executive and management statistics.

ECONOMIC DEVELOPMENT OF THE UNITED STATES

Ec 9 Seventeen sessions; 2½ hours' credit.

A broad general survey is made of the economic and industrial development of the United States from the colonial period to the present time. Emphasis is placed upon the origin and development of American industries, changes in industrial and commercial policies, economic forces at work in business and social institutions, and upon problems arising from the growth and development of business and industry in the United States.

INTERNATIONAL ECONOMIC RELATIONS

Ec 11-12 Thirty-three sessions; 5 hours' credit.

A seminar course for advanced students in the field of economics. Current developments in international relations as they affect business in the United States are considered from an objective point of view. The student is taken behind the scenes of international relations to analyze the basic problems of economics, finance, and diplomacy involved. The effect of foreign policies upon business in the United States is studied.

LAW (L)

Underlying the ever-increasing complexity of modern business is a growing body of law which defines and directs business operations.

LEGAL ASPECTS OF BUSINESS

L 1-2 Thirty-three sessions; 5 hours' credit.

A study of the application of legal machinery to the current needs and demands of modern business for facilitating organization, credit, finance, security or protection from risks, marketing, and commercial and industrial peace. The course also provides excellent preparation for the law phase of the C.P.A. examination.

MANAGEMENT (M)

With the complex and rapidly changing conditions of modern business, the functions of administration and management must be clearly defined and maximum economies effected. Through the problem approach, these courses train the student to supplant guesswork and trial and error processes with organized knowledge and proven management methods.

BUSINESS AND INDUSTRIAL MANAGEMENT

M 1-2 Thirty-three sessions; 5 hours' credit.

An introductory survey of the whole field of business and industrial administration with special emphasis upon training the student in the analysis of business and industrial problems.

The functions of the business and industrial administrators are discussed with particular reference to the control policies and devices of the manager. The course presents the problems of business and industry as an interrelated whole and helps the student to see the lines of study which lead to solution of those problems.

PRINCIPLES OF PRODUCTION

M 3 Prerequisite: M 1-2 Seventeen sessions; 2½ hours' credit.

A basic treatment of the fundamental manufacturing processes. Topics studied include factory organization, manufacturing and assembly sequences, selection and co-ordination of productive facilities, product design, inspection and salvage.

SCIENTIFIC MANAGEMENT

M 4 Prerequisite: M 3 Seventeen sessions; 2½ hours' credit.

The practical application of the principles of scientific management to production problems. The course embraces study in process research including time and motion study, standardization of materials, analysis of operations, methods of production, and production control including wage incentive systems.

PSYCHOLOGY FOR BUSINESS AND INDUSTRY

M 5 Seventeen sessions; 2½ hours' credit.

Business psychology is the study of predicting and influencing human behavior in business. It provides an understanding of man's mental life, of how the individual and the group behave and are influenced in their behavior, and of how the business man may predict and control his own behavior and that of those with whom he works. The study and analysis of the student's own personal problems and behavior constitute a valuable and interesting phase of the course.

PURCHASING

M 6 Seventeen sessions; 2½ hours' credit.

A practical study of the functions and duties of the purchasing agent, the organization and administration of his department, and his relations with other departments. The following are representative of subjects discussed: the purchasing function, qualifications of the purchasing agent, selection of supply sources, purchasing policies and budgets, cataloguing information, testing and inspection of purchases, and stores control.

CREDITS AND COLLECTIONS

M 7-8 Thirty-three sessions; 5 hours' credit.

This course furnishes instruction in the theory of credit, the workings of a Credit Department, whether in the wholesale or retail field, and in the analysis and use of credit statements as aids to efficient management.

INDUSTRIAL MANAGEMENT PROBLEMS AND POLICIES

M 9-10 Thirty-three sessions; 5 hours' credit.

Co-ordination of the functional relationships which exist between the different departments of business with the problems affecting the determination of administrative and managerial policies is the purpose of this study. Special attention is given to scientific management of industry and business and to the co-ordination of production with purchasing, sales, finance, and transportation. Cases and problems dealing with organization and expansion, consolidation and combinations, reorganizations, internal administration, industrial and human relations, and governmental control form the basis of discussion and study.

GOVERNMENT CONTROLS IN BUSINESS

M 11-12 Thirty-three sessions; 5 hours' credit.

A study of the economic and political relationships which exist between business and government, with particular emphasis upon the work of the Interstate Commerce Commission and the Federal Trade Commission; also other government agencies including the U. S. Departments of Agriculture, Commerce, Labor, and particularly the Bureau of Labor Statistics. Social as well as economic aspects of government control will be considered.

BUSINESS PLANNING AND RESEARCH

M 17-18 Prerequisite: Ec 7-8 Thirty-three sessions; 5 hours' credit.

This course is devoted primarily to a study of economic and business planning and to the technique of research and study in relation to planning. The fundamental principles

underlying the solution of research problems will be analyzed and students will be required to apply those principles to specific problems involving planning and research.

BUSINESS ADMINISTRATION SEMINAR

M 19-20 Prerequisites: A 5-6, D 1-2, Ec 3-4, Ec 7-8. Thirty-three sessions; 5 hours' credit.

This course provides the unique opportunity to use the information acquired from other courses in an intelligent, intimate discussion of live current problems which arise daily in marketing, production, and finance, with notes as to social significance. Emphasis is placed on the translation of problems out of the academic book atmosphere into the personal terms in which these problems must be met in business life and solved. Work is conducted upon a prepared individual conference basis.

THESIS (T)

BACHELOR'S DEGREE THESIS

T 3-4, 5 hours' credit.

Each candidate for the B.B.A. degree may submit a thesis or the Business Readings reports. The conditions to be fulfilled in connection with a thesis are:

1. The selection of the subject, preparation of the outlines, and the collection of data must be worked out in accordance with the requirements of the Committee on Theses.
2. Two typewritten copies of the completed thesis must be presented to the Dean or the Director in the Divisions, not later than March 15 of the year in which the candidate expects to graduate.
3. The thesis is expected to meet the equivalent of the work required in a full-year course. It is expected to give evidence that its writer has made a thorough study of the subject or problem selected, that he has marshaled the data in a businesslike manner, and has given evidence of his ability to reach sound and reasoned conclusions, and to present his findings in clear and convincing terms.

OCCUPATIONS (O)

The School considers that the knowledges, skills, and experiences acquired in the full-time employment of its students are the equivalent in many respects to the work carried on in a laboratory. For this reason all members of the three upper classes who expect to qualify for the Bachelor of Business Administration degree must meet the occupational experience requirements listed below.

In order that this occupational experience may have the maximum educational value, the School maintains a Department of Vocational Guidance and Placement under the supervision of a competent Director. It is the responsibility of this Department to assist those students:

- a. who need advice and guidance about employment in business;
- b. who are unemployed and need placement service, and
- c. who are already employed but need to change their present employment connections in order to obtain the greatest possible benefit from their training and experience.

There is no tuition charge for the occupational courses listed below, even though they are required for the degree. Furthermore, all services of the Department of Vocational Guidance and Placement are without charge to the student.

ELEMENTARY OCCUPATIONS

O 1-2 10 hours' credit.

In this course students are required to meet with the Director of Vocational Guidance and Placement in groups or individually as he may direct, and to submit in the Upper Middler year a complete and detailed record of their employment for the college year. This report is one factor in evaluating the occupational experience credit of the student.

INTERMEDIATE OCCUPATIONS

O 3-4 10 hours' credit.

A continuation of O 1-2. Continuing guidance under the supervision of the Director of Vocational Guidance and Placement. Consideration of psychological and economic factors affecting vocations; vocational objectives. A complete report of the employment of the Junior year is required.

ADVANCED OCCUPATIONS

O 5-6 10 hours' credit.

A critical consideration of the student's present employment in the light of present-day occupational trends. Individual conferences with a view to vocational adjustments, if deemed desirable. A complete report of the employment of the Senior year is required.

School of Business

Administrative Policies

Requirements for Admission

All applicants whose credentials are approved by the Committee on Education, and who are admitted for degree or other programs, are classified as regular or conditioned students.

Regular Students

Applicants for admission as regular students must present evidence of the completion of an approved secondary school course, or the equivalent 15 units.*

Conditioned Students

Applicants who do not meet the requirements for admission as regular students may be admitted as conditioned students provided they present satisfactory evidence of ability to profit by the work of the School.

Conditioned students may remove their admission conditions and be re-classified as regular students by using *a*, *b*, *c*, or a combination of *a* and *b*.

- a*. By applying courses which they have completed in the School of Business or in another approved college or university at the rate of one unit for each two and one-half semester hours. A course cannot be credited both for the removal of admission conditions and for the degree.
- b*. By applying units for work completed in an approved secondary school, or for work certified by an accredited certifying agency.
- c*. By action of the Committee on Education based upon all factors affecting the achievement and ability of the student in the School, when the student shall have completed the first thirty semester hours of work in his program; provided this work shall have been completed in not less than three years of attendance and with an average grade of not less than 70%. All conditioned students are required to take prescribed aptitude tests during the first year of attendance. These tests, for which no specific preparation can be made, are designed to test intellectual capacity and general fitness for college work rather than preparation in the specific subject matter of a secondary school program.

*A unit represents a year's work in any subject in any approved secondary school constituting approximately a quarter of a full year's work, or the equivalent. A four-year day high school course is regarded as representing at least 15 units of work, or 3 units in junior high school and 12 units in a three-year senior high school.

Advanced Standing

Advanced standing credit in the School may be obtained in one or both of two ways, as follows:

By Transfer of Credit. Subject to the approval of the Committee on Education, credit may be given for work completed in other approved schools, colleges, and universities. Applicants desiring credit by transfer should indicate their desire at the time the application for admission is filed. A copy of the catalog of the institution from which the transfer is sought should accompany the application for admission.

By Examination. Applicants who desire to secure advanced standing credit by examination are required to apply in writing for examination in those subjects for which credit is sought. Proper forms should be obtained from the School Office and filed at the time the application for admission is filed. Applications for examinations are approved by the Committee on Education which will take into account previous training, business experience, and other factors showing the applicant's special preparation and ability in the subject or subjects in which credit is sought by examination.

A grade of 75% must be obtained in an examination in order to secure advanced standing credit for the subject. Upon successfully passing an examination, the applicant may be given full credit as though the subject had been pursued in the School, or may be excused from the subject and permitted to select an elective course in lieu thereof.

The same subject cannot be offered both for admission credit and as a basis for advanced standing.

Registration

Before attending classes, students should report at the School Office for registration. Students are requested to assist in lessening congestion during the opening week by registering during the two weeks previous to the opening of the School.

Late registration for those unable to enter at the opening of the School year will be permitted at the discretion of the Dean, or the Director in the case of the Divisions.

Class Sessions

Classes are held each evening of the week except Saturday. *The normal schedule for students pursuing a degree, title, or certificate program is three evenings a week. Students may arrange their schedules so as to attend classes one, two, three or four evenings a week depending upon the number of subjects taken.* Students interested in the schedule of classes should apply to the office of the school in the city in which they expect to attend.

Notify the Office Immediately

Of change of address.

Of withdrawal from any course — otherwise the fee for that course will be charged.

Of withdrawal from the School, giving date of the last session attended.

Attendance

The limited amount of time devoted to each subject and the rapid rate of progress in covering the essential content of a course make it highly desirable that students be present at every session. Because of the importance of regular attendance and its bearing upon the quality of scholarship, the policies governing attendance are:

Students who attend 75% or more sessions in a course are entitled to pass in that course if they attain a minimum final grade of D.

Students who attend between 50% and 74% of the sessions in a course are entitled to pass in that course if they attain a minimum final grade of C. Those who do not attain the minimum required grade of C may remove the condition only by means of a make-up examination in which they must receive a mark sufficient to raise the course grade to C.

Students who attend less than 50% of the sessions in a course will be considered ineligible to take the final examination or to receive any credit for the course.

Attendance credit is granted only when the student is in attendance at least three-quarters of the class period. Three separate absences of less than 30 minutes each constitute one complete absence unless such partial absences are canceled by satisfactory excuses.

Outside Preparation

It is expected that students will devote on the average two hours to preparation for each hour spent in the classroom. A student carrying a normal program of three evenings a week will, therefore, be expected to devote to outside preparation an average of eleven to twelve hours a week. Some courses require more time for preparation than others.

Regular Examinations

The general policies governing regular examinations are:

A final examination will be held at the end of each course unless an announcement to the contrary is made.

The minimum passing grade in a regular final examination is D.

In case a student is excused from a final examination by the Dean or Director, he may take the next regular or conditioned examination in the subject. The student who fails to complete a course within one year from the termination of that course must repeat the course, except that in special cases for justifiable cause the Committee on Education may waive this rule.

The student who has received a passing mark in a final examination and in a course may not take another examination for the purpose of raising his grade unless he repeats the course in its entirety.

Condition Examinations

The following policies govern re-examinations:

Permission for taking a make-up examination is dependent upon the quality of the work which the student has done throughout the course and is a privilege which the Committee on Education may grant to students who have received an E grade or an incomplete (Inc.).

The condition or make-up examinations are given in September. Students should consult the School Office for the specific dates of each examination.

Only one make-up examination in any given subject is allowed for the purpose of removing a conditional failure.

A make-up examination for purposes of removing a condition or an incomplete grade must be taken within the next School year. In such cases students may take either the examination at the condition examination period or the final examination when next given if within a period of one year. A fee of \$2 is charged for each School of Business examination taken out of course.

A minimum grade of 65% is required on each make-up examination unless a higher minimum is specified.

Whatever grade the student obtains on the make-up examination is credited as the final examination grade, but in no case can the final grade in the course be more than 70% except in the case of students who have been excused from taking the regular final examination.

Tests

Four tests in full-year courses and two tests in half-year courses are regularly scheduled. These tests are regarded as a part of the term or course work. Since no make-up tests are given, students who miss a test should confer with their instructors regarding their status.

Marks and Credits

The following system of grading is in use:

Superior Work, A; Above Average Work, B; Average Work, C; Lowest Passing Grade, D; Unsatisfactory Work, E; Failure, F; Incomplete, Inc.

Students receiving an E, or unsatisfactory work grade, in an examination or as a final grade in the course, may remove the unsatisfactory grade by taking a make-up examination when it is next given, or at the time of the conditional examinations in September. The minimum passing grade of 65% is required on the make-up examination, unless a higher minimum is designated. In no case will a student taking a make-up examination be allowed more than a C for a final grade even though a higher grade may be obtained.

Students receiving an F grade in a course must repeat the course in its entirety including term work, examinations, and attendance.

The policy is followed of mailing all grade and status reports to students instead of issuing these reports at the School Office or over the telephone.

A passing grade in a final examination as well as a passing final grade in the course is necessary in order to receive credit in the course.

Credit for one-half of a full-year course is not generally given, and in any event only upon approval by the Dean in advance of beginning the course.

In order to qualify for a degree, title, or a certificate the student must maintain a general average of C for the entire program. This is not interpreted to mean that each course must be passed with a grade of C, but that the average of all courses must be at least C. Grades of courses credited by transfer or by examination are not included in computing averages.

Graduation with Honors

Honors are based upon the excellence of the work performed by the students in the School. Three honorary distinctions are conferred upon properly qualified candidates for the bachelor's degree upon graduation:

Highest honors to those who have completed all work with an average of 95% with no grade less than C.

High honors to those who have completed all work with an average of 90% with no grade less than C.

Honors to those who have completed all work with an average of 85% with no grade less than C.

These honors are subject to further conditions as follows:

To be entitled to honors a student must have completed a minimum of two full years of study in the School.

Courses credited by advanced standing whether by transfer or by examination will be eliminated in determining honors.

Scholarships, Awards, and Loan Funds

The following scholarships and awards are available to students enrolled for a normal schedule of fifteen or more semester hours of class work who are pursuing a degree or title program in the School of Business in Boston. One-fourth of the scholarship is applied to the tuition of the recipient at each quarterly payment.

SCHOOL OF BUSINESS HONOR AWARDS

A half tuition scholarship award is made each year to the highest ranking student of that year in the Junior, Upper Middler, Lower Middler, Sophomore and Freshman classes who re-enrolls the following year for a normal schedule of study.

A quarter tuition scholarship award is made each year to the second highest ranking student of that year in the Junior, Upper Middler, Lower Middler, Sophomore and Freshman classes who re-enrolls the following year for a normal schedule of study.

To be eligible for either a half or a quarter tuition honor award, a student entering the School with advanced standing credit, except by examination, must have completed at least thirty semester hours of classroom work at the time the award is made.

THE CLARKSON-ALUMNI SCHOLARSHIP

This scholarship, made available through the generosity of the Alumni Association of the School of Business in Boston, is in memory of George S. Clarkson, a member of the Class of 1914 and an instructor in accounting for many years. This scholarship, which is indeterminate in amount, is granted to the student who obtains the highest final grade in the course in Auditing unless he is eligible for an award of greater monetary value, in which event the Clarkson-Alumni award will be made to the highest ranking student in Auditing who is not eligible for such an award. To be eligible for this scholarship the student must pursue a normal schedule the following year.

DEAN RUSSELL WHITNEY MEMORIAL SCHOLARSHIP

Alpha Chapter of the Pi Tau Kappa Fraternity sponsors an annual tuition scholarship in memory of former Dean Russell Whitney. The award consists

of a half tuition of sixty dollars awarded to the man in the Junior Class of the School of Business whose qualities of leadership and influence among his fellow students, whose strength of character, whose record of scholarship and broad achievement, mark him as outstanding. The award is made available to the student in his senior year. To be eligible for this scholarship the student must pursue a normal schedule during his senior year.

KAPPA TAU PHI SCHOLARSHIP

This scholarship award, amounting to thirty dollars, is made available by the Kappa Tau Phi Sorority. It is granted annually to the woman student who ranks highest in her class at the end of the Sophomore year unless she is eligible for an award of greater monetary value, in which event the award will be made to the highest ranking woman student who is not eligible for such an award. To be eligible for this scholarship the student must pursue a normal schedule the following year. In determining this award grades of all courses completed in the Freshman and Sophomore years shall be considered.

ALUMNI LOAN FUND

The Alumni Association of the School of Business in Boston has provided a loan fund which is available to students in the Senior and Junior classes in Boston who are in need of financial assistance in order to continue their studies. Applications for loans should be addressed to the Dean of the School. All applications must be approved by the Alumni Loan Fund Committee.

SCHOOL OF BUSINESS LOAN FUND

By vote of the Student Council a part of the Student Activities fees for 1937-1938 was set aside to provide a loan fund which is available to students temporarily in need of small loans for tuition or other School charges. Students needing assistance from this fund should confer with the Dean who administers it.

Probation and Discipline

The Committee on Education in dealing with students whose work in the School may be unsatisfactory, or whose conduct is such as to make it inadvisable for them to continue as members of the student body, considers each case upon its individual merits. The following general principles are kept in mind in handling such cases:

Students whose scholarship in any given year is unsatisfactory may be dropped from the School or may be placed on probation with the privilege of spending a year in review.

When a student is placed on probation, the probation is formally imposed for a definite time and can only be extended by approval of the Committee on Education.

This Committee has the authority to dismiss from the School or place on probation at any time or to strike off from the list of candidates for the degree any student whom it may deem unworthy either on account of unsatisfactory scholarship or for any great defect of conduct or character. The Committee may ask any student to withdraw from the School who is obviously out of sympathy with the aims and ideals of the School.

School of Business

General Information

Classrooms and Libraries

The classrooms are furnished with modern equipment and are thoroughly adapted to evening school work. Improvements in classroom facilities are constantly being made to meet the needs of the student body.

In connection with the General Library of the University in Boston a special section is devoted to books on business subjects. In addition, the leading trade and business magazines are available for student use. Additions are constantly being made to the business section of the Library in recognition of the new demands for business education and research. The reading rooms of the Library are open Monday through Friday from 8:45 A.M. to 10 P.M. They close at 5 P.M. on Saturdays and are not open Sundays and holidays.

All members of the School in Boston are entitled to the privilege of using the Boston Public Library including the Business Branch at 20 City Hall Avenue. The same privilege is accorded students in the Divisions for the use of the libraries in their respective cities.

Textbooks and Supplies

The Northeastern University Bookstore is a department of the University and is operated for the convenience of the student body. All books and supplies which are required by the students for their work in the University may be purchased at the Bookstore. In addition, the Bookstore also carries a large number of general supplies. In Boston the main store is situated in the basement of Richards Hall.

Student Council

The social and extracurricular life of the School is in charge of Student Councils consisting of representatives from each class or school group. In addition to arranging for occasional social affairs, special lectures, and meetings, the council represents the interests of the student body. The faculty and the officials advise with the council in regard to School policies.

Honor Fraternity

Sigma Epsilon Rho is the honor fraternity in the School of Business. Its purposes are:

To promote acquaintance and good fellowship among those men who have attained highest scholastic standing in the School.

To stimulate the student body to higher scholastic accomplishment through the bearing, influence, and work of these selected men.

To develop methods of mutual improvement and advancement among the members of this fraternity.

To support high moral, professional and scholastic ideals.

Only students with honor standing are admitted to the fraternity. Admission is by invitation, after nomination by the School faculty.

An outstanding business book is awarded each year by Sigma Epsilon Rho Fraternity to the highest ranking student for that year in each of the Sophomore, Lower Middler, Upper Middler, and Junior classes. Students will receive the award only in the event that they enroll for the subsequent year.

School of Business

Tuition and Other Fees

Matriculation Fee

The University matriculation fee of \$5 must accompany the initial application for admission to the University. This fee is not refundable.

University Fee

All students enrolled in the School of Business are charged a University fee based on the number of semester hours for which the student is enrolled. The charge is 70 cents a semester hour of classroom work, but not exceeding \$10 in any one year. This fee covers in part library, general materials, general university service charges, and similar items for which separate fees are frequently charged by other colleges and universities. It is payable by all students regardless of date of admission or the curriculum in which they are enrolled. For students enrolled for the entire year, the University fee is payable one-half when the student enrolls in September, and one-half with the January payment. If enrollment is for a single semester, the fee is payable with the first payment of the semester.

Tuition Fees

Tuition fees for courses in the School of Business are based on a charge of \$8 a semester hour.

Complete Programs

A student carrying a normal program of three full-year courses throughout the School year will complete fifteen semester hours of work for which the charge is \$120. This charge is payable in four payments of \$30, the first being due during the opening week of School and the other three during the weeks of November 13, January 15, and March 5.

Single Courses

The charge for each half-year course carrying two and one-half semester hours' credit is \$20, payable in two payments of \$10, and for each full-year course carrying five semester hours' credit, \$40, payable in four payments of \$10, except that payment for any course completed in one semester must be made during the semester in which the course is completed.

Deferred Payment Privilege

Students who would be denied the advantages of a systematic education if required to meet the tuition payments in the manner specified above, may make other payment arrangements with the Dean. A nominal charge is made for this service.

Courses in Other Departments of the University

School of Business students assigned to courses in other departments of the University are charged the tuition rates and other fees effective in the departments to which they are assigned.

Late Registration

No reduction in tuition is made for late registration. A student is neither entitled to classroom privileges nor considered as registered and enrolled until tuition due has been paid or satisfactory arrangements made in person with the Dean.

Student Activities Fee

An activities fee is charged all students on the following basis:

\$1 for students enrolled for courses not exceeding five semester hours.

\$2 for students enrolled for courses exceeding five semester hours.

The fee is payable during the opening week in September. Students registering in the second semester pay the fee at the time of registration. It is administered by the University authorities in the interest of the students, and is used primarily to promote extracurricular activities.

Other Fees

A fee of \$2 is charged for each make-up examination or advanced standing examination. This fee must be paid on or before the date of the examination.

A fee of \$10 is charged for each of the Business Readings courses. One-half is payable with the November tuition payment and one-half with the March tuition payment. This fee applies only to those who elect to submit Business Readings in lieu of a thesis, and is payable ordinarily during the Upper Middler and Junior years.

A thesis fee of \$20 is required of all degree candidates who elect to write theses. This fee is payable upon presentation of the thesis which is due not later than March 15 of the year in which the student expects to receive the degree.

The University graduation fee, charged to those who are candidates for a degree, is \$10, payable on or before May 1st of the year in which the student expects to graduate. A fee of \$5 is charged to all candidates for a title or certificate and is payable on or before May 1st of the year the program is to be completed.

Expense for Books and Materials

Students purchase their own textbooks and working materials. The cost varies according to the subjects for which the student is enrolled. The average cost for a normal program of three subjects is about \$13, with a maximum of approximately \$20. The textbooks for single courses range from \$1.25 to \$5.

General Financial Information

Checks should be drawn payable to Northeastern University.

Students who have withdrawn from a course for good cause and who are permitted to repeat it are credited with the tuition previously paid on that course, provided they re-enroll for the same course within the next two college years. The credit cannot be applied, however, until the balance due on the course has been paid.

Students are not permitted to attend class sessions or take any examinations or tests until they have paid their tuition fees or have made satisfactory arrangements for payments.

Students will not be advanced in class standing, or permitted to re-enroll in the University, nor will degrees be conferred until all financial obligations to the University have been met.

No certificate of honorable dismissal will be issued to any student who has not fully met his financial obligations to the University.

Withdrawals and Refunds Policy

In the event a student is obliged to withdraw from the School in which he is enrolled for causes deemed adequate by the Committee on Withdrawals, the balance of the tuition paid after the following deductions have been made will be refunded:

- a.* Four per cent of the total yearly tuition charge shall be deducted for each week of attendance or fraction thereof, in the event of enrollment for a full School year.
- b.* Ten per cent of the total tuition charged shall be deducted for each week of attendance or fraction thereof, in the event of enrollment for a semester.

The amount of tuition to be charged in the case of withdrawals shall be computed as indicated under *a* and *b* above from the date of each quarterly payment.

Matriculation, examination, thesis, and other fees are not refundable except that graduation and certificate charges will be refunded in case of non-qualification.

No refunds are granted unless the application for withdrawal is filed within forty-five days after the student has ceased attendance.

Application
Received by _____

Date _____

Northeastern University
SCHOOL OF BUSINESS

360 HUNTINGTON AVENUE, BOSTON 15, MASS.

A fee of five dollars must accompany this application. Make checks, money orders, or drafts payable to Northeastern University. **This fee is not refundable.**

APPLICATION FOR ADMISSION

Date _____

Mr.
Mrs.

I (Print name in full) _____ (First) _____ (Middle) _____ (Last)

hereby apply for admission to the School of Business, for the program designated.

B.B.A. Degree {
☐ In Accounting
☐ In Management
☐ In Engineering and Business (_____)
(Specialization)

Associate ☐ In Accounting
☐ In Management
☐ Single Courses: (List each course) _____

Mail address: Street _____ City _____ State _____

Home address: Street _____ City _____ State _____

Place of birth _____ Date of birth _____ Age _____ yrs. _____ mos.

Race _____ Religion _____ ☐ Single ☐ Married

Name and address of parent or guardian if under 21 years of age _____

I have attended, including other schools of the Northeastern University system, the following schools above grammar grade. List all junior and senior high schools, evening high schools, preparatory schools, colleges and universities (if attendance at a university, *designate school*).

NAME OF SCHOOL	LOCATION — CITY, STATE		Check Years Attended				Date Left	Date of Graduation	Degree if any
			1	2	3	4			

I request advanced standing credit for previous college work completed at (name of institution) _____

For information relative to my character and general ability, I refer you to the following person who is not a student or relative:

Name _____ Street _____

City _____ State _____ Occupation _____

I first learned of Northeastern University through _____

Following is the name and address of the person who recommended that I enter the School of Business _____

I am employed as indicated below.

Name and Address of Employer _____

My Position _____

DO NOT WRITE BELOW THIS LINE

(My Usual Signature)

Approved for admission as a regular, _____ degree student with _____ units credited and with _____ units conditioned.
conditioned, certificate _____
unclassified _____

Date _____

Dean

(over)

All applicants for admission to the School of Business are required to furnish the information requested below. This information is desired in order that the school officers and counsellors may be more helpful to students in planning their programs and in achieving their vocational objectives.

1. In what types of work have you been occupied since leaving school?
2. Describe in *detail* your duties in your present position.
3. For what specific position or vocation do you expect your studies to prepare you?
4. Add such other information as may be helpful and valuable in considering your application for admission.

NORTHEASTERN UNIVERSITY

COEDUCATIONAL

COLLEGE OF LIBERAL ARTS

Offers a broad program of college subjects serving as a foundation for the understanding of modern culture, social relations, and technical achievement. Varied opportunities available for vocational specialization. Degree: Bachelor of Science or Bachelor of Arts.

COLLEGE OF ENGINEERING

Offers curricula in Civil, Mechanical (with Industrial and Aeronautical options), Electrical, and Chemical Engineering. Classroom study is supplemented by experiment and research in well-equipped laboratories. Degree: Bachelor of Science in the professional field of specialization.

COLLEGE OF BUSINESS ADMINISTRATION

Offers curricula in Accounting, Marketing and Advertising, and Industrial Administration. Each curriculum represents in itself a broad survey of business technique, differing from the others chiefly in emphasis. Degree: Bachelor of Science in Business Administration.

SCHOOL OF LAW

Offers day and evening undergraduate programs admitting those who present a minimum of one-half of the work accepted for a bachelor's degree in an approved college or its full equivalent, each program leading to the degree of Bachelor of Laws.

SCHOOL OF BUSINESS

Offers curricula through evening classes leading to the degree of Bachelor of Business Administration with appropriate specification in Accounting, Management, and Engineering and Business. Preparation for C.P.A. examinations. Intensive programs arranged to meet special needs.

EVENING COURSES OF THE COLLEGE OF LIBERAL ARTS

Certain courses of the College of Liberal Arts are offered during evening hours in the fields of Biology, Chemistry, Economics, English, History, Government, Psychology and Sociology. A special program preparing for admission to the School of Law is also available. The program is equivalent in hours to one-half the requirement for the A.B. or S.B. degree. Special courses also available. Degree of Associate in Arts conferred.

The Colleges of Liberal Arts, Engineering, and Business Administration offer day programs and are conducted on the Co-operative Plan. After the freshman year students may alternate their periods of study with periods of work in the employ of business or industrial concerns. Under this plan they gain valuable experience and earn a large part of their college expenses. Full-time curricula are available for students who do not desire the Co-operative Plan.

In addition to the above schools the University has affiliated with it and conducts the Lincoln Technical Institute offering, through evening classes, courses of college grade in various fields of engineering leading to the degree of Associate in Engineering; and the Lincoln Preparatory School, an accredited evening school preparing for college entrance and offering other standard high school programs.

For further information regarding any of the above schools, address

NORTHEASTERN UNIVERSITY

BOSTON, MASS.

School of Law
47 Mt. Vernon Street

Telephone: KENmore 5800

Other Schools
360 Huntington Avenue

SPRINGFIELD, MASS.
114 Chestnut St.
Tel.: Spr. 6-3681

**NORTHEASTERN
UNIVERSITY**

College of Liberal Arts

BULLETIN OF EVENING COURSES

Announcement for 1945-1946



BOSTON 15, MASSACHUSETTS

OFFICE HOURS

JUNE 21, 1945–AUGUST 10, 1945

Monday and Tuesday 8:45 A.M.— 9:00 P.M.

Wednesday through Friday 8:45 A.M.— 5:00 P.M.

AUGUST 13, 1945–JUNE 8, 1946

Monday through Friday 8:45 A.M.— 9:15 P.M.

Saturdays

Until Labor Day 8:45 A.M.—12:00 P.M.

During September 8:45 A.M.— 4:00 P.M.

After October 1 8:45 A.M.— 1:00 P.M.

JUNE 10, 1946–AUGUST 9, 1946

Monday and Tuesday 8:45 A.M.— 9:00 P.M.

Wednesday through Friday 8:45 A.M.— 5:00 P.M.

The office is closed on all legal holidays.

GIFTS AND BEQUESTS

Northeastern University will welcome gifts and bequests for the following purposes:

- (a) For its building program.
- (b) For general endowment.
- (c) For specific purposes which may especially appeal to the donor.

It is suggested that, when possible, those contemplating gifts or bequests confer with the President of the University regarding the University's needs before legal papers are drawn.

Gifts and bequests should be made only in the University's legal name, which is "Northeastern University."

For further information or an interview

ADDRESS: Director of Evening Courses

NORTHEASTERN UNIVERSITY

COLLEGE OF LIBERAL ARTS

360 Huntington Avenue, Boston 15, Mass.

Telephone: KENmore 5800

NORTHEASTERN UNIVERSITY

College of Liberal Arts

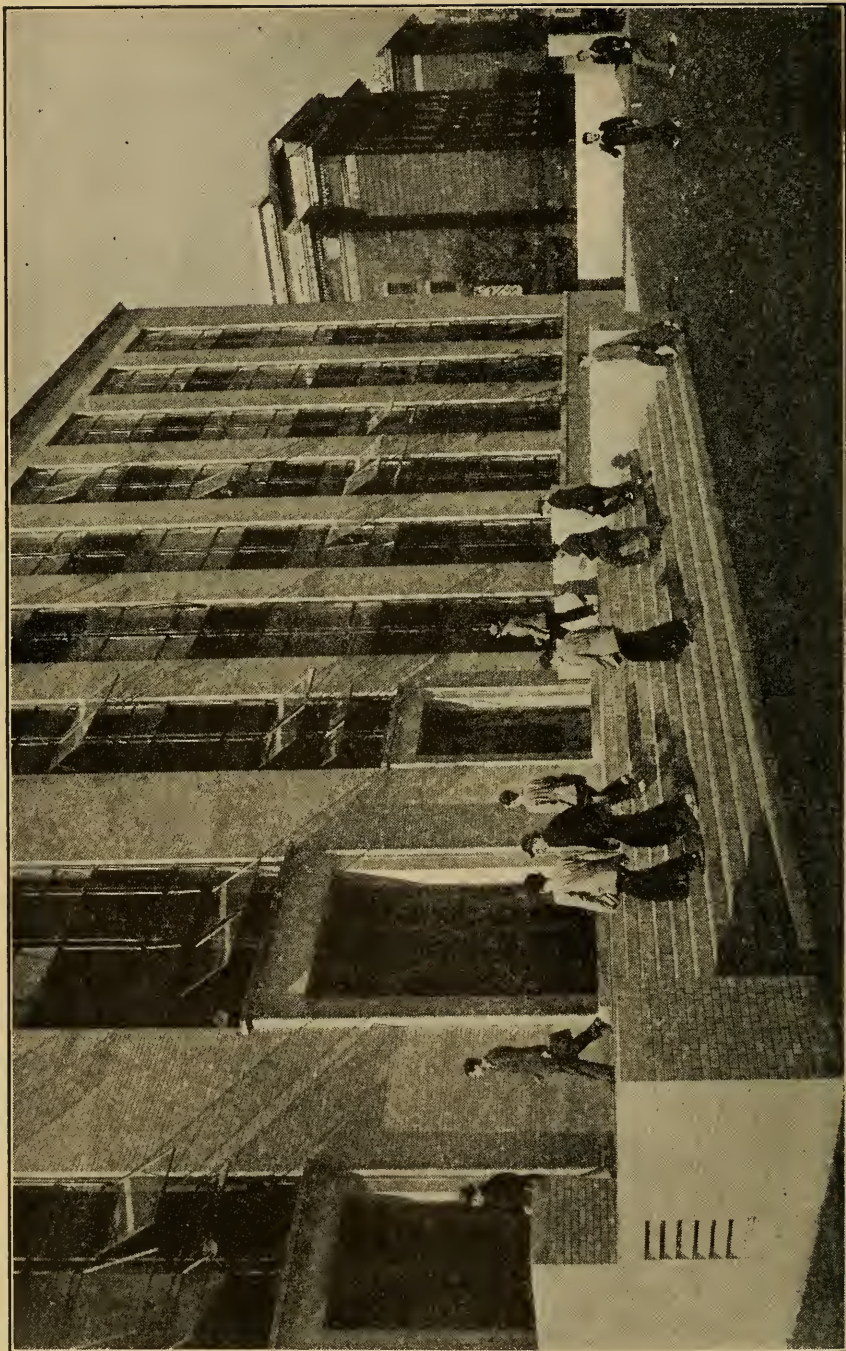
BULLETIN OF EVENING COURSES

COEDUCATIONAL



The University is located at the entrance to the Huntington Avenue subway within nine minutes of Park Street and easily accessible from all points.

1945-1946



ENTRANCE TO RICHARD HALL, NORTHEASTERN UNIVERSITY

CONTENTS

	<i>Page</i>
CALENDAR.....	4

NORTHEASTERN UNIVERSITY

THE NORTHEASTERN UNIVERSITY CORPORATION.....	6
GENERAL UNIVERSITY COMMITTEES.....	7
OFFICERS OF ADMINISTRATION.....	8
CHAIRMEN OF INSTRUCTIONAL DEPARTMENTS.....	8

COLLEGE OF LIBERAL ARTS

Evening Courses

GENERAL STATEMENT.....	9-11
LOCATION.....	11-12
STATEMENT OF PURPOSE.....	13
PROGRAMS.....	16-18
Chemistry.....	17
Labor-Relations Institute.....	18
Law-Liberal Arts.....	16
Pre-Medical, Pre-Dental and Pre-Veterinarian.....	16
REQUIREMENTS FOR THE DEGREE OF ASSOCIATE IN ARTS.....	14
REQUIREMENTS FOR A.B. OR S.B. DEGREE.....	15
ADMISSION REQUIREMENTS.....	15
GENERAL INFORMATION.....	19
Advanced Standing.....	19
Application for Admission.....	19
Registration.....	19
Attendance and Examinations.....	19
Grades.....	20
Honor List.....	20
Scholarships.....	20
TUITION AND FEES.....	21
DESCRIPTION OF COURSES.....	22-30

THE NORTHEASTERN UNIVERSITY CORPORATION

ROBERT GRAY DODGE, *Chairman*

FRANK LINCOLN RICHARDSON, *Vice-Chairman*

CARL STEPHENS ELL, *President of the University*

HENRY NATHANIEL ANDREWS, *Treasurer*

EVERETT AVERY CHURCHILL, *Secretary*

JOSEPH FLORENCE ABBOTT	HARRY HAMILTON KERR
CHARLES FRANCIS ADAMS	FRANK HOWARD LAHEY
WILMAN EDWARD ADAMS	HALFDAN LEE
ROGER AMORY	GALEN DAVID LIGHT
ARTHUR ATWOOD BALLANTINE	JAMES FRANKLIN McELWAIN
GEORGE LOUIS BARNES	HUGH DEAN McLELLAN
THOMAS PRINCE BEAL	EDWARD ABBOTT MACMASTER
FARWELL GREGG BEMIS	JOHN RUSSELL MACOMBER
SAMUEL BRUCE BLACK	ALBERT EDWARD MARSHALL
HENRY GODDARD BRADLEE	HAROLD FRANCIS MASON
GEORGE AUGUSTUS BURNHAM	IRWIN LIKELY MOORE
GODFREY LOWELL CABOT	FRED LESTER MORGAN
PAUL CODMAN CABOT	IRVING EDWIN MOULTROP
WALTER CHANNING	CLARENCE LUCIAN NEWTON
WILLIAM CONVERSE CHICK	SAMUEL NORWICH
PAUL FOSTER CLARK	OLAF OLSEN
WILLIAM H. COLLINS	AUGUSTIN HAMILTON PARKER, JR.
SEARS B. CONDIT	GEORGE EDWIN PIERCE
ALBERT MORTON CREIGHTON	ROGER PIERCE
EDWARD DANA	MATTHEW POROSKY
EDWARD DANE	FREDERICK SANFORD PRATT
JUSTIN WHITLOCK DART	ROGER PRESTON
WILLIAM JAMES DAVIDSON	SIDNEY RABINOVITZ
BERNARD W. DOYLE	STUART CRAIG RAND
PAUL AUGUSTUS DRAPER	WILLIAM McNEAR RAND
DAVID FRANK EDWARDS	JAMES LORIN RICHARDS
WILLIAM PARTRIDGE ELLISON	HAROLD BOURS RICHMOND
JOSEPH BUELL ELY	CHARLES FOREST RITTENHOUSE
ROBERT GREENOUGH EMERSON	JOHN JAMES ROBINSON
JOHN WELLS FARLEY	ROBERT BILLINGS RUGG
ALLAN FORBES	LEVERETT SALTONSTALL
ERNEST BIGELOW FREEMAN	RUSSELL MARYLAND SANDERS
FRANKLIN WILE GANSE	ANDREW SEBASTIAN SEILER
HARVEY DOW GIBSON	FRANK PALMER SPEARE
MERRILL GRISWOLD	RUSSELL HENRY STAFFORD
GEORGE HANSEN	FRANCIS ROBERT CARNEGIE STEELE
HENRY INGRAHAM HARRIMAN	CHARLES STETSON
CARROLL SHERLOCK HARVEY	EARL PLACE STEVENSON
HARVEY P. HOOD	ROBERT TREAT PAINE STORER
CHANDLER HOVEY	FRANK HORACE STUART
WESTON HOWLAND	EDWARD WATSON SUPPLE
HOWARD MUNSON HUBBARD	RALPH EMERSON THOMPSON
MAYNARD HUTCHINSON	JAMES VINCENT TONER
RAYMOND WINFIELD JAMES	ELIOT WADSWORTH
ARTHUR STODDARD JOHNSON	EUSTIS WALCOTT
CHARLES BERKLEY JOHNSON	EDWIN SIBLEY WEBSTER
JACOB JOSEPH KAPLAN	SINCLAIR WEEKS

GENERAL UNIVERSITY COMMITTEES

EXECUTIVE COUNCIL

CARL STEPHENS ELL, *Chairman*

EVERETT AVERY CHURCHILL

MILTON JOHN SCHLAGENHAUF

ALBERT ELLSWORTH EVERETT

WILLIAM CROMBIE WHITE

UNIVERSITY CABINET

CARL STEPHENS ELL, *Chairman*

EVERETT AVERY CHURCHILL

WINTHROP ELIOT NIGHTINGALE

ALBERT ELLSWORTH EVERETT

RUDOLF OSCAR OBERG

ROGER STANTON HAMILTON

EDWARD SNOW PARSONS

CHARLES WILLIAM HAVICE

JOHN BUTLER PUGSLEY

WILFRED STANLEY LAKE

MILTON JOHN SCHLAGENHAUF

JAMES WALLACE LEES

J. KENNETH STEVENSON

HAROLD WESLEY MELVIN

WILLIAM CROMBIE WHITE

STUART MEAD WRIGHT

LIBRARY COMMITTEE

EVERETT AVERY CHURCHILL, *Chairman*

ALBERT ELLSWORTH EVERETT

WILFRED STANLEY LAKE

ROGER STANTON HAMILTON

MYRA WHITE

WILLIAM CROMBIE WHITE

COLLEGE OF LIBERAL ARTS

Evening Courses

OFFICERS OF ADMINISTRATION

CARL STEPHENS ELL, A.B., M.S., Ed.M., Sc.D., *President of the University*

FRANK PALMER SPEARE, M.H., LL.D., *President Emeritus*

EVERETT AVERY CHURCHILL, A.B., Ed.D., *Vice-President of the University*

ALBERT ELLSWORTH EVERETT, B.S., M.B.A., *Director of Evening Division*

WILFRED STANLEY LAKE, A.B., M.A., Ph.D., *Dean*

MILTON JOHN SCHLAGENHAUF, A.B., B.D., M.A., *Director of Admissions*

CHAIRMAN OF INSTRUCTIONAL DEPARTMENTS

CHARLES FREDERICK BARNASON, A.B., A.M., Ph.D., *Professor of Modern Languages*
Res. 122 Downer Ave., Hingham

STANLEY GODDARD ESTES, A.B., M.A., Ph.D., *Professor of Psychology*
Res. 60 Pinckney St., Boston. On Leave of Absence.

ROGER STANTON HAMILTON, A.B., M.A., Ph.D., *Professor of Economics*
Res. 1367 Walnut St., Newton Highlands

CHARLES WILLIAM HAVICE, A.B., M.A., S.T.B., Ph.D., *Professor of Sociology*
Res. 178 Goden St., Belmont

FREDERICK WILLIAM HOLMES, A.B., M.A., *Professor of English*
Res. 43 Lincoln St., Dedham

STANLEY DEMETRIUS MIROYIANNIS, S.B., M.A., Ph.D., *Professor of Biology*
Res. 8 Cumberland St., Boston

CARL FREDERICK MUCKENHOUP, A.B., S.B., Ph.D., *Professor of Physics*
Res. 332 Winchester St., Newton Highlands

JOSEPH SPEAR, A.B., M.A., *Professor of Mathematics*
Res. 31 Matchett St., Brighton

ARTHUR ANDREW VERNON, S.B., M.S., Ph.D., *Professor of Chemistry*
Res. 14 Standish St., Newton Highlands

GENERAL STATEMENT

NORTHEASTERN UNIVERSITY is incorporated as a philanthropic institution under the General Laws of Massachusetts. The State Legislature, by special enactment, has given the University general degree granting powers.

The Corporation of Northeastern University consists of men who occupy responsible positions in business and the professions. This Corporation elects from its membership a Board of Trustees in whom the control of the institution is vested. The Board of Trustees has four standing committees: (a) an Executive Committee which serves as an Ad Interim Committee between the regular meetings of the Board of Trustees and has general supervision of the financial and educational policies of the University; (b) a Committee on Buildings which has general supervision over the building needs of the University; (c) a Committee on Funds and Investments which has the responsibility of administering the funds of the University; (d) a Development Committee which is concerned with furthering the development plans of the University.

Founded in 1898, Northeastern University, from the outset, had as its dominant purpose the discovery of human and social needs and the meeting of these needs in distinctive and highly serviceable ways. While subscribing to the most progressive educational thought and practice, the University has not duplicated the programs of other institutions but has sought "to bring education more directly into the service of human needs."

With respect to program, Northeastern has limited itself:

- To offering, in its several schools, basic curricula from which non-essentials have been eliminated;
- To effective teaching;
- To advising and guiding students;
- To giving students the chance to build well-rounded personalities through a balanced program of extracurricular activities.

The Northeastern Plan of Education is especially designed for the student who must earn while he learns. In the main, it consists of two definite types of education:

- Co-operative Education by Day,
- Adult Education by Night.

The plan has been developed in such a way that experience in jobs with pay is utilized to help students of limited financial resources secure an education and at the same time gain the maximum educational benefit from their practical experience. So far as the New England States are concerned, Northeastern University is the only institution whose day

colleges, other than the School of Law, are conducted under the Co-operative Plan.

The several schools and programs of the University are conducted either under the name "Northeastern University" or by its affiliated schools, The Lincoln Schools and The Huntington Day School for Boys. The following is a brief outline of the principal types of educational opportunities offered:

1. In the field of Co-operative Education there are three day colleges — the College of Liberal Arts, the College of Engineering, and the College of Business Administration. The College of Liberal Arts offers majors in the usual fields of the arts and the sciences leading to the degrees of Bachelor of Arts and Bachelor of Science. The College of Engineering, one of the largest engineering colleges in the United States, has curricula in Civil, Mechanical (with Industrial and Aeronautical options), Electrical, and Chemical Engineering. The College of Business Administration has curricula in Accounting, Marketing and Advertising, and Industrial Administration. The College of Engineering and the College of Business Administration confer the degree of Bachelor of Science with specification indicating the field of specialization. The Co-operative Plan under which all of these day colleges operate enables the student to alternate regular periods of classroom instruction with supervised employment in an industrial or commercial position, thus combining theory and practice in an exceedingly effective manner. Apart from the educational advantages of the Co-operative Plan is the opportunity for self-support while the student is pursuing his studies at Northeastern University. During the co-operative periods, students not only gain experience but are also paid for their services. Approximately three hundred business and industrial concerns co-operate with Northeastern University in making this program effective.
2. The School of Law conducts both a day and an evening undergraduate program which prepares for admission to the bar and for the practice of the law and leads to the degree of Bachelor of Laws.
3. The Adult Education Program has been developed in the evening work of the School of Law as indicated above, in the School of Business, and in the evening courses of the College of Liberal Arts. The School of Business has curricula in Management, Accounting, and Engineering and Business. This School awards the Bachelor of Business Administration degree with specification. A division of the School of Business is also conducted in Springfield with curricula in Accounting, Management, and Engineering and Business, leading to the Bachelor of Business Administration degree. The College of Liberal Arts offers certain of its courses during evening hours constituting a program, three years in length, equivalent in hours to one-half the requirements for the A.B. or S.B. degree and providing a general education and preparation for admission to the School of Law. The degree of Associate in Arts is conferred upon those who complete this program.

4. The Adult Education Program has also been developed through the Lincoln Schools, which are affiliated with and conducted by Northeastern University. The classes in these schools are held at convenient evening hours. The Lincoln Technical Institute offers curricula upon a college level in various phases of engineering leading to the degree of Associate in Engineering; whereas the Lincoln Preparatory School, accredited by the New England College Admissions Board, prepares students for admission to college and offers other standard high school programs.
5. The Huntington Day School for Boys, also affiliated with and conducted by Northeastern University, is the outgrowth of a demand in the city of Boston for an urban preparatory school with high educational standards which would furnish thorough preparation for admission to the leading colleges and universities. While easily accessible to the various sections of Boston and to the suburbs, it has the facilities of a country day school and offers a country day school program. This School is one of the leading preparatory schools of the country.

LOCATION OF UNIVERSITY BUILDINGS

Northeastern University is located in Boston, a city which is rich in educational and cultural opportunities. The University center is on Huntington Avenue just beyond Massachusetts Avenue and opposite the Boston Opera House. Here on an eight-acre campus are located the educational buildings of the University except that of the School of Law. Evening classes for the College of Liberal Arts are held at the University center on Huntington Avenue.

Richards Hall

Richards Hall at 360 Huntington Avenue contains over one hundred thousand square feet of floor space devoted to administrative and instructional purposes. On the first floor are the general administrative offices of the University. The University bookstore, the "Husky Hut" and the student checkroom are located on the ground floor. There are three large lecture halls and numerous classrooms and laboratories. The office of the Director of the evening courses of the College of Liberal Arts is located on the first floor of this building.

New Building

This building contains forty-two thousand square feet of floor space. Here are located the Chemical Engineering and Biological laboratories, a large Commons Room open to day and evening students, and eighteen classrooms and lecture halls.

East Building

This building contains the general University library, classrooms, and certain laboratories.

South Building

The South Building of the University contains certain laboratories, a large lecture hall, and several classrooms.

Beacon Hill Building

The Beacon Hill Building, located at 47 Mt. Vernon Street, within a few minutes' walk of the State House, and occupied exclusively by the Law School, contains administrative offices, a library, classrooms, student lounges, and other facilities.

TRANSPORTATION

The University center is easily reached from the various railroad stations and from all points on the Boston Elevated System. The new Huntington Avenue Subway comes to the surface at the University center. Ample parking space is available for the use of students coming by automobile.

THE COLLEGE OF LIBERAL ARTS

Evening Courses

STATEMENT OF PURPOSE

The College of Liberal Arts through its evening courses offers a program in general education and a special pre-legal program preparing for admission to Northeastern University School of Law.

By conducting its classes at convenient evening hours, it gives high school graduates who are obliged to seek work immediately upon graduation an opportunity to continue their education. In general those who seek admission to the evening classes of the College of Liberal Arts are divided into two groups.

The first group is composed of those who wish to continue their education along cultural lines. The second group is composed of those who wish to prepare for admission to the School of Law. Under the rules of the Supreme Judicial Court in relation to the admission of attorneys in Massachusetts, an applicant is required to complete one-half of the work acceptable for a bachelor's degree in an approved college or university before he begins the study of law. The evening pre-legal program of the College of Liberal Arts is especially designed for those who wish to prepare for admission to either the day or evening division of the Northeastern University School of Law.

Increasingly the value of a broad cultural education is being realized. This is recognized in the pre-legal study required before admission to law school in nearly all states. It is also recognized in newly required courses of a cultural nature for accounting and engineering training. This cultural education is obtainable either before or after the completion of one's specific vocational training. Not only is a cultural education valuable in and of itself, but from a strictly vocational point of view it is highly important, the broadly educated man or woman in many instances having a distinct advantage so far as vocational advancement is concerned.

REQUIREMENTS FOR THE DEGREE OF ASSOCIATE IN ARTS

Each evening course meets the same academic standards and carries the same semester hour credit as the corresponding course in the day program of the College of Liberal Arts. The courses, however, have been carefully selected to meet the needs of evening students.

The following requirements must be fulfilled by candidates for the degree of Associate in Arts:

1. A candidate must complete a total of not less than sixty-eight semester hours of academic work with a degree of proficiency acceptable to the faculty.
2. A candidate must meet through his program of studies the minimum course requirements listed below:

	<i>Semester Hours Required</i>
Economics	4
English	14
Government	6
History	8
Psychology or Sociology	4
Science	8
Other Courses	24
	—
	Total 68

The above requirements may be met by class attendance three nights a week, forty weeks each year for the three years. In some cases it may be advisable for the best interest of the student to take more than three years to complete this program.

Graduation with Honor

Candidates who have maintained an honor grade average will be graduated with honor. To be eligible for honors a student must have completed a minimum of two full years of study in the College of Liberal Arts.

REQUIREMENTS FOR A.B. OR S.B. DEGREE

Any student who completes the requirements for the Associate in Arts degree and who also meets the requirements for admission to the Day College may become a candidate for a bachelor's degree in the College of Liberal Arts by completing an additional sixty-seven semester hours of work and by meeting major, minor and language requirements in the Day College.

ADMISSION REQUIREMENTS

Applicants for admission to the evening courses as candidates for the degree of Associate in Arts must qualify by one of the following methods:

1. Graduation from an approved course of study in an accredited secondary school.
2. Completion of fifteen secondary school units with a degree of proficiency satisfactory to the Department of Admissions.

Applicants who later desire to qualify for the A.B. or S.B. degree or to enter law school must have included in their secondary school course the prescribed subjects in either Group A or Group B.

Group A

English	3
*Foreign Language	3 or 4
(Ancient or Modern)	
Social Sciences	2
**Electives	6 or 7
Total	15

Group B

English	3
Mathematics	2 or 3
Natural Sciences	1
**Electives	8 or 9
Total	15

*One year of a foreign language is not accepted. Therefore, this requirement may consist either of three years of one language or two years of each of two languages.

**Not less than four of the "electives" must be in one or more of the following academic branches: Languages, Natural Sciences, Mathematics, Social Sciences, History.

LAW — LIBERAL ARTS

(Combined Program)

The combined curriculum in the College of Liberal Arts and the School of Law enables students to reduce by one year the time ordinarily required for obtaining the A.B. or S.B. and the LL.B. degree. Students who have completed before entering the School of Law a total of 105 semester hours of academic work, of which at least 70 must have been earned in the Northeastern University College of Liberal Arts, and who have fulfilled all other graduation requirements, will receive the A.B. or S.B. degree upon the satisfactory completion of the full first year program in the Day Division of the School of Law. Students who enter the Evening Division of the School of Law will be eligible for the first degree upon satisfactory completion of the full equivalent of the first year of the day Law School program.

In both instances the first degree will be conferred at the next commencement following determination of eligibility for the first degree.

BIOLOGY

The following courses are offered for those wishing further study in the field of Biology. The four courses comprise the Biology requirements for the Pre-Medical, Pre-Dental and Pre-Veterinarian Programs.

B1e	General Zoology	3 semester hour credits
B2e	General Botany	3 semester hour credits
B5e	Vertebrate Zoology	2 semester hour credits
B6e	Vertebrate Zoology	2 semester hour credits

Associate in Science Program in CHEMISTRY

This program is a sequence of courses covering more than one-half of the course requirements in Chemistry for the Bachelor of Science Degree. The entire program can be completed in three years. The three-year period is based on prerequisite courses in college algebra, trigonometry and physics.

First Semester

Second Semester

Prerequisite: College Algebra, Trigonometry and Physics

First Year

		<i>Hours per Week</i>			<i>Hours per Week</i>
M3	Analytical Geometry	2½	M4	Integral Calculus.....	2½
M5	Differential Calculus		Ch2e	General Chemistry.....	2½
Ch1e	General Chemistry.....	2½	ChL2e	General Chemistry	
ChL1e	General Chemistry			Laboratory.....	3
	Laboratory.....	3			

Second Year

Ch3e	Qualitative Analysis...	2½	Ch4e	Quantitative Analysis..	3
ChL3e	Qualitative Analysis		ChL4e	Quantitative Analysis	
	Laboratory.....	6*		Laboratory.....	7**

Third Year

Ch5e	Organic Chemistry.....	2½	Ch6e	Organic Chemistry.....	2½
ChL5e	Organic Chemistry		ChL6e	Organic Chemistry	
	Laboratory.....	3		Laboratory.....	3
Ch7e	Physical Chemistry	3	Ch8e	Physical Chemistry	3
ChL7e	Physical Chemistry		ChL8e	Physical Chemistry	
	Laboratory.....			Laboratory.....	

*Meets two evenings per week — three hours per evening.

**Meets two evenings per week — one evening of three hours and the second four hours.

LABOR RELATIONS INSTITUTE

The management of labor relations presents the most vital and challenging aspect of our industrial development of the immediate future. Continuance of our American way of industrial democracy demands a harmonious understanding of the underlying principles of labor and industrial management for the peaceful adjustment of their common problems.

The Labor Relations Institute of Northeastern University was organized to serve this need. It is dedicated to the service of both labor and management. It directly concerns the work of industrial and labor executives, plant managers, personnel directors, union shop councillors and stewards. Teachers in the fields of management and the social sciences will also find that the program provides a valuable academic background for their instruction.

PROGRAM OF COURSES

First Semester

Courses Common to both Management and Labor

COLLECTIVE BARGAINING —
Industrial Background and Development in U. S.
WAGE ADMINISTRATION —
Job Analysis and Evaluation
Wage Payment Plans

Second Semester

INDUSTRIAL PSYCHOLOGY

GOVERNMENT AND LABOR-MANAGEMENT RELATIONS
Laws and Agencies of Collective Bargaining

Courses Particularly for Management

(Presented from Management's Viewpoint)

PERSONNEL ORGANIZATION
AND ADMINISTRATION
PUBLIC SPEAKING
AND CONFERENCE LEADERSHIP

CONTRACT NEGOTIATION
AND ADMINISTRATION
MANAGEMENT SEMINAR

Courses Particularly for Labor

(Presented from Labor's Viewpoint)

UNION ORGANIZATION
AND ADMINISTRATION
PUBLIC SPEAKING
AND CONFERENCE LEADERSHIP

CONTRACT NEGOTIATION
AND ADMINISTRATION
LABOR SEMINAR

To complete the program for a certificate requires two evenings a week for two years. It is designed to accommodate those students wishing to take individual courses in preference to the full program. The courses have college credits in either the College of Liberal Arts or the School of Business upon prior approval of the dean of the respective school.

Students registering for the full program will take each semester one of the courses common to both management and labor and one course from among those designed particularly for management or for labor according to his choice.

GENERAL INFORMATION

Advanced Standing

Students transferring from approved colleges will be admitted to advanced standing provided their records warrant it. Whenever a student enters with advanced standing and later proves to have inadequate preparation in any of his prerequisite subjects, the faculty reserves the right to require the student to make up such deficiencies.

Application for Admission

The college year begins in September. Students are also admitted at the beginning of the second semester to courses for which they have the required background.

Each applicant for admission is required to file an application blank setting forth his previous education and the name of one person to whom reference may be made concerning his character and previous training.

Inside the back cover of this catalogue is an application blank. It should be filled out in ink and forwarded to the Director of the Evening Courses of the College of Liberal Arts, Northeastern University, 360 Huntington Avenue, Boston 15, Massachusetts. Upon receipt of the application, the Director obtains the previous school records, the statement from the reference and, after considering these, informs the applicant as to his eligibility for admission.

Applications should be filed preferably before the registration period, thus allowing time to determine eligibility for admission and to adjust any schedule problems before the opening night. Applicants are urged to visit the school for a personal interview if it is possible for them to do so.

Applicants seeking advanced standing should arrange to have transcripts of their previous college records forwarded with their application.

Registration

The filing of the application for admission does not constitute registration. All students are required to register at the college and arrange for the payment of their tuition during the registration period. (See calendar, page 4.)

Attendance and Examinations

Attendance is required of all students at recitations and lectures continuously throughout the academic year.

Regular final examinations are held at the close of each course.

No student will be permitted to take a final examination in a course who has been present at less than seventy per cent of the lectures. To be

entitled to attendance credit a student must be present at least one hour in a one and one-half hour lecture.

Make-up examinations are scheduled in March and September of each year. (See calendar, page 4.) Unsatisfactory and incomplete grades must be removed not later than the next school year following that in which they were received.

Grades

The work of each student shall be graded upon examinations according to the following scale:

A	Superior	} Honor Grades
B	Above average	
C	Average	
D	Lowest passing grade	
E	Unsatisfactory*	
F	Failure**	
I	Incomplete — no examination***	

Honor List

The Honor List, issued at the end of each semester, contains the names of all students taking a full program who have an honor grade average in all subjects with no grade below "C" in any subject.

Scholarships

Partial tuition scholarships are awarded annually to the two highest ranking students of the freshman and middler classes. These awards are made during the summer and are based on the record made during the previous school year.

Freshman Class — One \$80.00 scholarship is awarded to the highest ranking student.

One \$40.00 scholarship is awarded to the second highest ranking student.

Middler Class — Similar awards are made to the two highest ranking students.

In order to be eligible for these awards, students must fulfill the following conditions:

1. They must be carrying a full program — not less than twenty semester hours.
2. They must register for a full program in the fall succeeding the award.

* An unsatisfactory grade may be made up by taking the make-up examination and obtaining a satisfactory grade.

** A failure may be made up only by repeating the course in its entirety and obtaining a satisfactory grade.

*** An incomplete grade may be made up by taking the next make-up or regular examination.

TUITION AND FEES

Application Fee

An application fee of \$5.00 is required when the application for admission is filed. This fee is not refundable.

Tuition

A full-year program for 1945-1946 will consist of twenty-four semester hours and all students carrying such a program are charged \$160 which is payable in four installments. The first installment is \$35 and is due on September 7. The remaining installments are due as follows: \$45, November 26; \$40, February 11; \$40, April 29. Students carrying less than a full program of twenty-four semester hours are charged at the rate of \$8 per semester hour.

University Fee

All students enrolled in any school of the University are charged a University Fee which is based on the number of semester hours for which the student is enrolled. The charge is fifty cents per semester hour of class work, not to exceed \$10 in any one year. This fee covers in part library costs, general material costs, general university service charges and similar items for which separate fees are frequently charged by other colleges and universities. For students enrolled for programs extending over the full year this fee is payable one-half with the September tuition payment and one-half with the February tuition payment. In the case of students enrolled for single courses the fee is payable at the beginning of the course.

Late Payment Fee

Students who do not pay their quarterly tuition bills during the week when they are due must pay a late payment fee of \$1.25. This is a fixed fee and does not vary with the amount of the tuition bill.

Examination Fees

A fee of \$2.00 is charged for each make-up examination taken by a student.

Graduation Fee

A graduation fee of \$5.00 is charged each student during the senior year. This fee is payable with the fourth installment of tuition on April 29.

Payments

Checks or money orders should be drawn payable to Northeastern University.

Withdrawals and Refunds

In the event a student is obliged to withdraw from the school for causes deemed adequate by the Committee on Administration, the unused tuition may be refunded in accordance with the regulations governing refunds.

DESCRIPTION OF COURSES

Not all courses are offered every year. The University reserves the right to withdraw any course in which there are less than eight enrollments.

ECONOMICS

Ec 3e Economic Principles

A thorough grounding in the fundamental principles and laws of economics is the aim of this basic course. The main topics include the nature and organization of production, the nature and importance of wants, the relation of money and prices, the process of exchange, and the nature of international trade.

2 semester hour credits

Ec 4e Economic Principles

A continuation of Ec 3e. A careful analysis is made of the determination of price under conditions of competition and monopoly, and of the distribution of wealth and income in the form of wages, economic rent, interest, and profits. The elements of insurance are discussed in connection with profits.

Preparation: Ec 3e

2 semester hour credits

Ec 12e Economic Systems

After developing various criteria for evaluating the different economic systems, the course proceeds to a comparative analysis of capitalism, co-operation, socialism, communism, and fascism. The problems of economic planning receive particular attention.

Preparation: Ec 3e, Ec 4e

2 semester hour credits

ENGLISH

E 1-Ae English I

The aim of this course is to help the student attain competence in the understanding and evaluating of modern literature and in written expression. It includes a review of the structural essentials of the English language, various written assignments, and the study of essays and informational articles.

2 semester hour credits

E 2-Ae English I

Continuing the general purposes of E 1-Ae, this course proceeds to a study of the special problems of description and narration, and to a critical reading of poems, short stories, and plays.

2 semester hour credits

E 5e Advanced Composition

The technique of writing in the shorter literary form will be studied in detail and applied systematically toward the building up of the student's individual style. A part of the time each week will be devoted to personal conference between the student and the instructor.

Preparation: E 1-Ae, E 2-Ae

2 semester hour credits

E 6e Advanced Composition

The continuation of the technique of writing and the building up of an individual style for the student.

Preparation: E 5e

2 semester hour credits

E 13e Effective Speaking

This course offers practical training in the preparation and presentation of the various types of speeches. The instruction is planned to eliminate defects of voice, posture, and delivery, and to develop in the student an ability to speak easily, naturally, and forcefully.

1 semester hour credit

E 14e Effective Speaking

Continued practice in impromptu and extempore speaking, organization of material, consideration of the audience, and vocabulary building form the basis of the course.

Preparation: E 13e

1 semester hour credit

E 15e Survey of English Literature

A survey of English literature to 1800. After a brief study of the social and political background of each literary period, the writing of the period is considered, and the more important writers are studied and read in detail. The purpose of the course is to give the student an appreciation of English literature as a whole, and an intimate knowledge of its major figures.

2 semester hour credits

E 16e Survey of English Literature

A survey of English literature from 1800 to the present century. The outstanding writers are read, studied, and related to the general background of nineteenth-century England. The purpose of the course is to give the student an understanding of the writers who contributed most to the formation and development of modern literature in England.

2 semester hour credits

E 25e American Literature to 1860

A survey of American literature from colonial times to the triumph of the transcendental movement in New England. The work of Bryant, Irving, Cooper, Poe, Emerson, Thoreau, Lowell, Holmes, Longfellow, and Melville will be emphasized.

2 semester hour credits

E 26e American Literature After 1860

Continuing E 25e, the course will consider the rise of realism after the Civil War, the development of American humor, the appearance of local color writers, and modern trends since 1900.

2 semester hour credits

GOVERNMENT**Gv 1e American Government and Politics**

The study of our National Government with respect to its organization and function; its powers and limitations under the Constitution; its legislative, administrative, and judicial machinery under the party system of government and bureaucracy.

2 semester hour credits

Gv 2e American Government and Politics

A more detailed study of the relationships of our federal, state, and municipal governments, including an analysis and comparison of the various state governments and types of municipal government with respect to state and local agencies for carrying out the executive, legislative, and judicial functions of government in a democratic country.

2 semester hour credits

Gv 3e Comparative Government

The older governments of Europe, those principally of Great Britain and France, but also of Switzerland and the Scandinavian countries, are described and analyzed in this course. Institutions are compared in these various states with reference to America and the newer governments of Europe. *2 semester hour credits*

Gv 4e Comparative Government

A study of the newer governments of Europe, as found in Germany, Italy, and the Soviet Union. Democracy and dictatorship are analyzed as different modes of life and rule. These states are compared to each other, to the older governments of Europe, and to the United States. *2 semester hour credits*

Gv 8e Modern Political Theory

A critical study is made of the major developments in political theory since Bentham, with special reference to the influence of these developments upon American politics and political institutions. Attention is paid to the modern conflict between the democratic and the totalitarian conceptions of the state. *2 semester hour credits*

HISTORY**H 1e History of Civilization**

This is primarily a background course. Introductory lectures deal with primitive society, the development of language and writing, and the early contributions of Egypt and Asia. More detail is given to the structure of Greek and Roman society, the rise of the Christian Church, the barbarian invasions of the Empire, the growth of Islam, and the life of the early Middle Ages. *4 semester hour credits*

H 2e History of Civilization

This course deals with the growth of the monarchies in Europe, the medieval Church, the art and literature of the Renaissance and Reformation, the economic revolution, the Age of Reason in France and England, the Old Regime and the Revolution in France, and the growth of science and industrialism.

As in H 1e, the emphasis is upon the cultural rather than the political history of Europe. *4 semester hour credits*

H 9e The United States to 1865

This course is an interpretation of the events which shaped the American nation to the Civil War. Social customs, economic influences, racial contributions, and humanitarian movements are not neglected, though the political history is stressed. *2 semester hour credits*

H 10e The United States Since 1865

Major attention is given to the social, economic, and political foundations of recent history in this survey of the transition of America from an agricultural to an urban industrialized society since the Civil War. Consideration is given to the problems arising with the emergence of America as a world power. *2 semester hour credits*

H 13e English Constitutional History

This course is devoted to a consideration of the English constitution and of the common law; local government vs. central government; the origin and growth of Parliament; the development of the British cabinet system; and a comprehensive study of statutes and documents.

2 semester hour credits

H 14e American Constitutional History

In this course a study is made of the historical development of the United States Constitution with particular emphasis on its progressive adaptation to a changing social and economic order.

2 semester hour credits

PHILOSOPHY**Ph 1e Introduction to Philosophy**

This introductory course combines the historical and systematic approaches to the subject. The historical treatment includes a survey of the chief philosophers and the development of basic philosophical ideas. The systematic treatment presents the several types of philosophy, such as realism, materialism, idealism, and pluralism. The place of philosophy is considered in its relation to ethics, religion, and natural sciences. The course both acquaints the student with facts about philosophy and trains him to think philosophically.

2 semester hour credits

Ph 2e Problems of Philosophy

The chief systems of thought are applied to what may be termed the persistent problems of philosophy. The problems are to be found in the fields of epistemology, teleology, and metaphysics. The following topics suggest representative problems which will be studied: the relation between mind and body, the nature and extent of freedom of the will, the validity of knowledge, and the bearing which the more recent views in physics and psychology have upon related philosophical problems.

Preparation: Ph 1e

2 semester hour credits

PHYSICS**P 1-Ae Survey of the Physical Sciences**

The purpose of the course is to give a definite conception of the physical world to those students who ordinarily would not elect a science course but who need to know something about the contributions and the place of the physical sciences in contemporary civilization. This course begins with a study of the universe and solar system. Consideration is given to the principles of distance, mass and weight, and the simple dynamics of bodies. The earth is studied from the viewpoint of its geological, meteorological, and chemical aspects, these main fields introducing a non-mathematical discussion of magnetism, heat, and electricity.

4 semester hour credits

P 2-Ae Survey of the Physical Sciences

In this course, which continues P 1-Ae, the phenomena of light are taken up. Following this, consideration is given to spectroscopy and matter structure, the periodic table, acids, bases, salts, and organic compounds. The course concludes with a discussion of certain aspects of physics which are of practical importance in the household, such as heating, lighting, refrigeration, and electrical appliances.

4 semester hour credits

PSYCHOLOGY**Ps 1e Introduction to Differential Psychology**

An elementary survey of the psychology of individual differences including personality differences, together with a presentation of some of the practical applications of the findings of differential psychology. *2 semester hour credits*

Ps 2e General Psychology

An introduction to general experimental psychology. The topics considered include learning, memory, thought, imagination, motivation, emotion, sensation, and perception.

Preparation: Ps 1e

2 semester hour credits

Ps 7e Social Psychology of Everyday Life

A course devoted to the psychological examination of some of the phenomena observable in everyday social life. This includes an analysis of the socialization process, the development and role of language in everyday life, and those problems which are particularly important in wartime — propaganda, rumor, and morale.

2 semester hour credits

Ps 9e Psychology of Personality

Presents a survey of historical and contemporary theories of the nature of personality. The problems of the generality of traits, the consistency of expression, and the relation of cultural factors to personality, growth, and integration will be discussed.

Preparation: Ps 2e

2 semester hour credits

Ps 10e Abnormal Psychology

An introduction to the field of psychopathology. The psychology of the neuroses and the minor disturbances of everyday life are emphasized. Interpretation of clinical findings in the light of some contemporary schools of psychology is included.

Preparation: Ps 9e

2 semester hour credits

SOCIOLOGY**S 1e Introduction to Sociology**

In presenting a survey of the origins and sources of human society, this study provides orientation for the courses in principles and problems which follow. The several theories of organic evolution are discussed. The antiquity of man and basic anthropological data are considered. The racial and ethnic groupings of man are then studied in the light of biological, geographical, and cultural factors.

2 semester hour credits

S 2e Principles of Sociology

Facts and principles basic to a general knowledge of the field of sociology are presented. The origins, forms, and forces of human associations are discussed. Consideration is given the several leading schools of sociological thought. The course is

designed to meet the needs of the student who desires only an elementary survey of the subject, as well as the student who plans to take advanced courses in social science.

2 semester hour credits

S 3e Social Problems

Attention is given the nature, complex causation, and interrelatedness of social problems in general. Cultural change, with its attendant lags, as well as other social forces and conflicts are studied. While sociological theory is occasionally introduced to clarify the problem at hand, the course is essentially practical in character. Such problems as poverty and unemployment, race antagonisms, population pressures, and the broken home are considered. Optional field trips to various institutions give concreteness to the problems studied.

Preparation: S 1e, S 2e

2 semester hour credits

S 4e Social Pathology

Similar to the course in Social Problems in background and approach, this study deals with the maladjustments and ills of human society. Emphasis is given those pathological conditions which exist in relations between the individual and the group. Typical subjects presented include mental defectiveness and disease, alcoholism and drug addiction, suicide, delinquency and crime, and pathologies of domestic relations. The field trips arranged for this course add to the practical knowledge of the social ills which are studied.

Preparation: S 1e, S 2e

2 semester hour credits

S 7e Principles of Social Ethics

To clarify the meaning of morality in social relations is the aim of this study. Right and wrong conduct is analyzed in the light of the highest values for human society. Moral laws are discussed, and the various systems of ethics are evaluated. Scientific attitudes are encouraged in order that one's moral judgments may be compatible with one's best reflective thought.

Preparation: S 1e, S 2e

2 semester hour credits

CHEMISTRY

Ch 1e General Chemistry

The fundamental ideas of matter and energy; the properties of gases, liquids, and solids; molecular weights; equations, atomic structure, classification of the elements; ionic reactions; the chemistry of the non-metals; and radioactivity are among the topics which are covered in the course.

3 semester hour credits

Ch 2e General Chemistry

A continuation of Ch 1e. Modern ideas covering the theory of solutions of electrolytes are discussed together with experimental facts. The chemistry of the metals is covered thoroughly, and time is devoted to an introduction to organic chemistry. The latter part of the course is given to qualitative analysis with particular emphasis on the laboratory work.

Preparation: Ch 1e

3 semester hour credits

Ch 3e Qualitative Analysis

The object of this course is to give the student knowledge of the various fundamental qualitative laws and principles. A portion of the time is devoted to the formulation of numerical terms which are essential to the understanding of the mass action law, ionic equilibria, solubility product, hydrolysis, and redox instants. The use of the newer spot tests is stressed and, where possible, their reactions explained. Whenever necessary, lectures demonstrating the various semi-micro techniques are given, as well as those designed to illustrate more fundamental properties of solutions.

Prerequisite: Ch 1e, Ch 2e

3 semester hour credits

Ch 4e Quantitative Analysis

It is the purpose of this course to give to the student a realization of the scientific development of quantitative methods. Each of the major operations such as weighing, measurement of volumes, titration, filtration, ignition, and combustion, is considered from the standpoint of the theoretical principles involved, and with due consideration of the manipulative technique necessary.

This is followed by the combination of these operations and their application to actual analysis, including a comprehensive study of volumetric methods.

After consideration of gravimetric analysis and of systematic mineral procedures, the remainder of the course consists of a critical discussion of common technical methods, including the standard ones for the analysis of steel, non-ferrous alloys, fuels, oils, gas, water, fertilizers, foods, etc.

As the correct calculation of analytical results is of no less importance than the actual procedures of analysis, a number of problems forms a very important part of the course.

Preparation: Ch 3e

Must be taken concurrently: ChL 4e

4 semester hour credits

Ch 5e-6e Organic Chemistry

A study of the basic principles of the aliphatic organic compounds. The resemblance of classes is stressed, and emphasis is placed on genetic charts. The industrial significance of the subject is discussed to show the practical nature of organic chemistry.

The course then deals with the preparation and characteristic reactions of the aromatic organic compounds. Special attention is given to polymerization, diazotization, dyes, and the use of catalysts, nitration, and sulphonation.

The last part of this course includes a study of the preparation and reactions of heterocyclic and alicyclic compounds.

Prerequisite: Ch 1e, Ch 2e

Must be taken concurrently: ChL 5e-6e

6 $\frac{3}{4}$ semester hour credits

Ch 7e Physical Chemistry

This course begins with a short resume of the field of physical chemistry, and its relationship to the other courses in chemistry and chemical engineering. Following this, atomic and molecular weights, and the properties of gases, liquids, solids, ionized, non-ionized, and colloidal solutions are taken up.

Prerequisite: Ch 4e

Preparation: ChL 4e

3 semester hour credits

Ch 8e Physical Chemistry

A continuation of Ch 7e, this course includes a consideration of the following topics: rates of reaction, homogeneous and heterogeneous equilibrium, and thermochemistry.

Prerequisite: Ch 4e

Preparation: Ch 7e

2½ semester hour credits

CHEMISTRY LABORATORY**ChL 1e General Chemistry Laboratory**

This course is coordinated with the lectures of Ch 1e. The student performs a series of experiments that stress some of the fundamental principles discussed in the lecture class.

1 semester hour credit

ChL 2e General Chemistry Laboratory

After a few preliminary experiments on electrolysis, complex ions, hydrolysis, and solubility product the student learns to use a qualitative analysis scheme. Several "unknown" substances are analyzed.

Prerequisite: ChL 1e

1 semester hour credit

ChL 3e Qualitative Analysis Laboratory

This course, which is carried out on a semi-micro scale, applies the material covered in Ch 3e to actual problems. After some preliminary experiments, certain procedures are combined and the separations and identifications made on both known and unknown solutions. Finally, these are combined into a complete, systematic scheme which is applied to artificially prepared mixtures and industrial materials. Careful manipulations, thoroughness in observation, and accuracy in arriving at conclusions are expected of each student.

Prerequisite: Ch 1e, Ch 2e

Must be taken concurrently: Ch 3e

2½ semester hour credits

ChL 4e Quantitative Analysis Laboratory

This is a laboratory course intended to illustrate by actual use the various analytical methods considered in Ch 4e. After certain preliminary experiments designed to acquaint the student with the apparatus used, volumetric analysis, including acidimetry and alkalimetry, oxidation, reduction, and precipitation methods are taken up.

This is followed by gravimetric analysis not only the usual illustrative gravimetric determinations, but also electrolytic, electrometric, combustion, and optical methods.

In the latter half of the course actual industrial methods are used so that at its completion the students should be able to perform satisfactorily any ordinary analysis.

Preparation: ChL 3e

Must be taken concurrently: Ch 4e

3¼ semester hour credits

ChL 5e Organic Chemistry Laboratory

Preparations and reactions designed to teach the laboratory technique involved in organic chemistry. The method of keeping notes on the work performed and reactions involved is stressed.

Prerequisite: Ch 1e, Ch 2e

Must be taken concurrently: Ch 5e

1¼ semester hour credits

ChL 6e Organic Chemistry Laboratory

This is a continuation of ChL 5e. The preparations in this course serve to acquaint the student with such types of chemical reactions as sulphonation, the Grignard reaction, the Perkins reaction, Skraup's synthesis, the Friedal-Crafts reaction, and the preparation of dyes.

In addition to the manipulation techniques taught in ChL 5e, this course introduces the use of vacuum distillations, fractional crystallization, and separations by physical and chemical means.

Preparation: ChL 5e

Must be taken concurrently: Ch 6e

1 $\frac{1}{4}$ semester hour credits

ChL 7e Physical Chemistry Laboratory

This course carries into actual practice the theory discussed in Ch 7e. Experiments include Determination of Vapor Density, Densities of Gas by Effusion Method, Surface Tension of Liquids and Viscosity of Liquids.

Preparation: ChL 4e

Credit combined with Ch 7e

ChL 8e Physical Chemistry Laboratory

A continuation of ChL 7e, this course covers experiments in Vapor Pressure of Liquids; Solubility Curve for a Pair of Liquids, Liquid-Vapor Equilibrium Curve, Distillation with Steam and Index of Refraction.

Preparation: ChL 7e

Credit combined with Ch 7e

BIOLOGY**B 1e General Zoology**

An introductory course dealing with the basic principles of zoology. A survey of the main types of animals; their classification, structure, life history, distribution, and economic value. The laboratory work illustrates the lectures.

3 semester hour credits

B 2e General Botany

An introductory course dealing with the basic principles of botany. A general survey of the more important plant types throughout the vegetable kingdom; their classification, structure, life history, distribution, and economic value. The fundamentals of plant physiology are stressed. The laboratory work illustrates the lectures.

3 semester hour credits

B 5e Vertebrate Zoology

This course deals with the comparative anatomy of the integument; the skeletal, muscular, digestive and respiratory systems of the principal classes of vertebrates. The laboratory work consists of detailed dissection of representative types.

Prerequisite: B 1e

2 semester hour credits

B 6e Vertebrate Zoology

Continues and presupposes course B 5e. In this part of the course, the lectures deal with the comparative anatomy of the vascular, excretory, reproductive and nervous systems together with the organs of special sense of the principal classes of vertebrates. The laboratory work consists of detailed dissection of representative types.

Preparation: B 5e

3 semester hour credits

NORTHEASTERN UNIVERSITY COLLEGE OF LIBERAL ARTS *Evening Courses*

360 Huntington Avenue, Boston 15, Mass.

A fee of five dollars must accompany this application. Make checks, money orders, or drafts payable to Northeastern University. **This fee is not refundable.**

Application
Received by
Date.....

APPLICATION FOR ADMISSION

To the Director: Mr. Date.....19....
Mrs.

I (Print name in full) Miss..... (First) (Middle) (Last)

hereby apply for admission to the Evening Courses of the College of Liberal Arts, as a candidate for the degree of Associate in Arts.

I plan to take the program checked below, and wish to enter with the term beginning.....194... month

- ☐ General Program ☐ Pre-Legal Program ☐ Special Courses
- ☐ Chemistry ☐ Biology ☐ Labor Relations

I do intend to continue in the Day Division to complete the requirements for the A.B. or S.B. degree if circumstances permit.
I do not

To enable you to determine my eligibility for admission I am furnishing the following information:

Mail
Address: Street.....City.....State.....
Home
Address: Street.....City.....State.....
Place of birth.....Date of birth.....Age.....years.....mos.....
Are you a citizen of the United States?.....Race.....Religion.....
Name and address of parent or guardian if under 21 years of age.....
.....

I have attended the following schools above the eighth grade. (Include other schools of the Northeastern University System and if you have attended other universities designate the school.)

NAME OF SCHOOL	LOCATION — CITY, STATE	Check Years Attended				Year Left	Year of Graduation	Degree if any
		1	2	3	4			

Course taken in high school (college, general, etc.)

I request advanced standing credit and will furnish transcript for previous college work completed at.....

.....

For information relative to my character and general ability, I refer you to the following person who is not a student or relative:

Name.....Street.....

City.....State.....Occupation.....

I first learned of Northeastern University through.....

Following is the name and address of the person who recommended that I enter the University.....

.....

.....
Usual signature.....

Approved for admission as a special student with.....units credited.
regular

.....Date.....
Director.....

NORTHEASTERN UNIVERSITY

COEDUCATIONAL

College of Liberal Arts

Offers a broad program of college subjects serving as a foundation for the understanding of modern culture, social relations, and technical achievement. Varied opportunities available for vocational specialization. Degree: Bachelor of Science or Bachelor of Arts.

College of Engineering

Offers curricula in Civil, Mechanical (with Industrial and Aeronautical options), Electrical, and Chemical Engineering. Classroom study is supplemented by experiment and research in well-equipped laboratories. Degree: Bachelor of Science in the professional field of specialization.

College of Business Administration

Offers curricula in Accounting, Marketing and Advertising, and Industrial Administration. Each curriculum represents in itself a broad survey of business technique, differing from the others chiefly in emphasis. Degree: Bachelor of Science in Business Administration.

School of Law

Offers day and evening undergraduate programs admitting those who present a minimum of one-half of the work accepted for a bachelor's degree in an approved college or its full equivalent, each program leading to the degree of Bachelor of Laws. Coeducational.

School of Business

Offers curricula through evening classes leading to the degree of Bachelor of Business Administration with appropriate specification in Accounting, Management, and Engineering and Business. Preparation for C.P.A. examinations. Intensive programs arranged to meet special needs.

Evening Courses of the College of Liberal Arts

Certain courses of the College of Liberal Arts are offered during evening hours in the fields of Economics, English, History, Government, Psychology, and Sociology. A special program preparing for admission to the School of Law is also available. The program is equivalent in hours to one-half the requirements for the A.B. or S.B. degree. Special courses also available. Associate in Arts degree conferred.

The Colleges of Liberal Arts, Engineering, and Business Administration offer day programs and are conducted on the Co-operative Plan. After the freshman year students may alternate their periods of study with periods of work in the employ of business or industrial concerns. Under this plan they gain valuable experience and earn a large part of their college expenses. Full-time curricula are available for students who do not desire the Co-operative Plan.

In addition to the above schools the University has affiliated with it and conducts: the Lincoln Technical Institute offering, through evening classes, courses of college grade in various fields of engineering leading to the degree of Associate in Engineering; and the Lincoln Preparatory School, an accredited evening school preparing for college entrance and offering other standard high school programs.

For further information regarding any of the above schools, address

NORTHEASTERN UNIVERSITY

Law School

47 Mt. Vernon Street

Other Schools

360 Huntington Avenue

**Boston 15, Massachusetts
Telephone : KENmore 5800**



LINCOLN TECHNICAL INSTITUTE

Evening Sessions



1945-1946

FORTY-FOURTH YEAR

College Courses in Engineering

INTERVIEWS

Prospective students, or those desiring advice or guidance regarding any part of the school work or curricula, are encouraged to arrange for personal interviews with the Dean or other officers of instruction. Career planning through competent guidance provides an understanding of professional requirements and develops that definiteness of purpose so vital to success.

OFFICE HOURS

JUNE 11, 1945 — AUGUST 11, 1945

<i>Monday, Wednesday, and Thursday</i>	8:45 A.M.—5:00 P.M.
<i>Monday and Tuesday</i>	8:45 A.M.—8:00 P.M.
<i>Saturdays</i>	8:45 A.M.—12:00 NOON

AUGUST 13, 1945 — JUNE 8, 1946

Monday through Friday 8:45 A.M.–9:00 P.M.
Saturdays 8:45 A.M.–12:00 NOON through September 1
8:45 A.M.–4:00 P.M. September 8, 15, 22, 29
8:45 A.M.–1:00 P.M. October 6–June 8

JUNE 10, 1946 — AUGUST 10, 1946

Same as for corresponding period for summer of 1945

CALENDAR

1945

Registration Period — <i>First Semester</i>	SEPTEMBER	4-17
Advanced Standing and Condition Examinations	SEPTEMBER	7
Classes Begin	SEPTEMBER	17
Legal Holiday. No Classes	OCTOBER	12
Thanksgiving Recess. No Classes	NOVEMBER	22-23
Final Class Session before Christmas Recess	DECEMBER	21

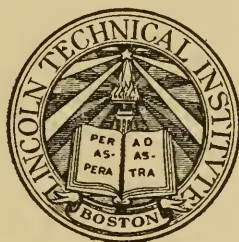
1946

First Class Session after Christmas Recess.....	JANUARY	2
Division B Classes Begin.....	JANUARY	7
Registration Period — <i>Second Semester</i>	JANUARY	28
Legal Holiday. No Classes.....	FEBRUARY	22
Legal Holiday. No Classes.....	APRIL	19
Summer Term Classes Begin.....	JUNE	3
Commencement.....	JUNE	2

LINCOLN TECHNICAL INSTITUTE

*Evening Engineering Courses
of College Grade*

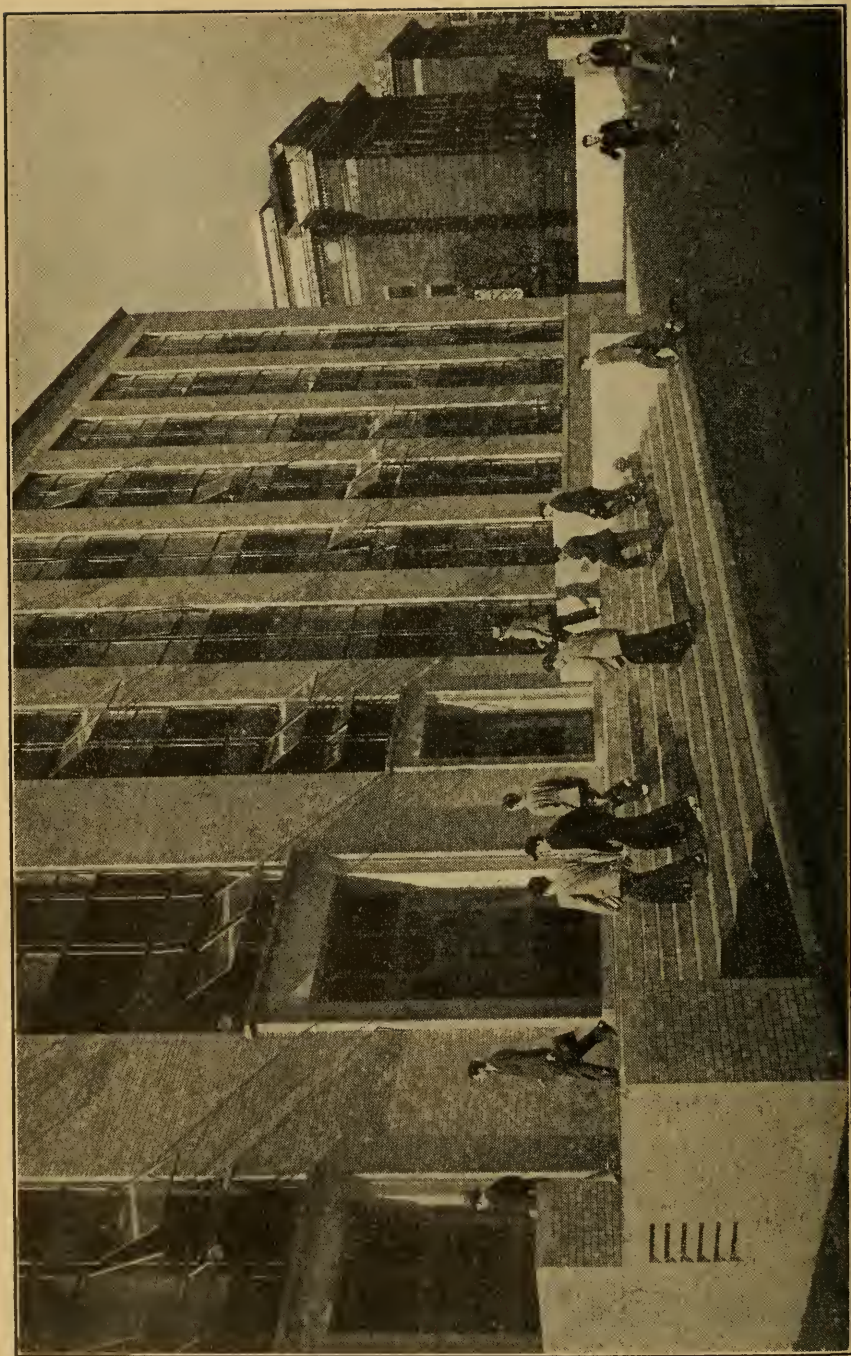
1945



1946

The Institute is situated at the entrance to the
Huntington Avenue subway within nine minutes
of Park Street and easily accessible from all points.

The Lincoln Technical Institute offers courses in Engineering leading to the Degree of Associate in Engineering which, through cooperation with Northeastern University Evening School of Business, carry credit toward the Degree of Bachelor of Business Administration in Engineering and Management awarded by Northeastern University.



Entrance to Richards Hall, Northeastern University, where many of the Institute courses meet

Education

AN INVESTMENT IN ENDURING VALUES

Now that the end of the war is slowly coming into sight and the post-war period is beginning to assume some reality, all ambitious young men are asking themselves the question, "Am I prepared to enter the competition of the post-war period?" Never before has training been so vitally necessary. Never before has education been a better investment than now when such an investment holds so much promise for the enduring values of a successful career.

The war-devasted world must be rebuilt. The necessities of civilized living must be provided. The materials destroyed must be replaced. All these needs will provide an opportunity not only in other countries but in our own for those who are prepared to provide the services which will be in demand.

The curtain is about to rise on a world full of opportunities. The same forces necessitating the unimaginable destruction have at the same time brought forth tremendous advancements in engineering and science. The world of tomorrow will present unlimited opportunities for those trained in technology to participate in the reconstruction and progress of a peace-time world.

TABLE OF CONTENTS

	<i>Page</i>
LINCOLN TECHNICAL INSTITUTE, GENERAL STATEMENT.....	6
Administrative Organization.....	5
FACULTY	8
GENERAL INFORMATION	13
Student Body.....	13
The Campus.....	14
Transportation.....	15
Textbooks and Supplies.....	16
Scholarships.....	16
Scholarship Awards.....	16
ADMISSION REQUIREMENTS.....	18
Classification of Students.....	19
ADMINISTRATIVE REGULATIONS.....	20
TUITION AND FEES.....	23
PROGRAMS OF INSTRUCTION.....	25
Civil and Structural Engineering.....	26
Chemistry.....	27
Special Courses in Chemistry.....	28
Electrical Engineering.....	29
Electronic Engineering.....	30
Industrial Engineering.....	31
Mechanical Engineering.....	32
Bachelor of Business Administration Program.....	33
ENGINEERING LABORATORIES.....	36
DESCRIPTION OF COURSES.....	43
Chemistry.....	43
Civil Engineering.....	45
Electrical Engineering.....	47
Electronic Engineering.....	48
Industrial Engineering.....	51
Mechanical Engineering.....	52
Drawing.....	55
Mathematics.....	56
Physics.....	58

LINCOLN TECHNICAL INSTITUTE

BOARD OF TRUSTEES

ROBERT GRAY DODGE
Chairman

FRANK LINCOLN RICHARDSON
Vice-Chairman

WILMAN EDWARD ADAMS	HENRY INGRAHAM HARRIMAN
HENRY NATHANIEL ANDREWS	CHANDLER HOVEY
ARTHUR ATWOOD BALLANTINE	MAYNARD HUTCHINSON
GEORGE LOUIS BARNES	ARTHUR STODDARD JOHNSON
FARWELL GREGG BEMIS	IRVING EDWIN MOULTROP
HENRY GODDARD BRADLEE	AUGUSTIN HAMILTON PARKER, JR.
GODFREY LOWELL CABOT	FREDERICK SANFORD PRATT
PAUL CODMAN CABOT	ROGER PRESTON
WALTER CHANNING	STUART CRAIG RAND
WILLIAM CONVERSE CHICK	JAMES LORIN RICHARDS
EVERETT AVERY CHURCHILL	HAROLD BOURS RICHMOND
PAUL FOSTER CLARK	LEVERETT SALTONSTALL
DAVID FRANK EDWARDS	FRANK PALMER SPEARE
CARL STEPHENS ELL	FRANCIS ROBERT CARNEGIE STEELE
WILLIAM PARTRIDGE ELLISON	CHARLES STETSON
JOHN WELLS FARLEY	EARL PLACE STEVENSON
ERNEST BIGELOW FREEMAN	ROBERT TREAT PAINE STORER
FRANKLIN WILE GANSE	EDWARD WATSON SUPPLE
HARVEY DOW GIBSON	JAMES VINCENT TONER

OFFICERS OF ADMINISTRATION

CARL STEPHENS ELL, A.B., M.S., Ed.M., ScD.
President

EVERETT AVERY CHURCHILL, A.B., Ed.D.
Vice-President

ALBERT ELLSWORTH EVERETT, B.C.E., S.B., M.B.A.
Director of Evening Program

JAMES WALLACE LEES, A.M.
Dean

DONALD HERSHEY MACKENZIE, B.S., Ed.M.
Assistant to the Dean

THE LINCOLN TECHNICAL INSTITUTE

THE LINCOLN TECHNICAL INSTITUTE is affiliated with Northeastern University. It offers evening engineering courses of college grade leading to the Degree of Associate in Engineering. These courses are acceptable towards the degree of B.B.A. in Engineering and Management offered by Northeastern University, Evening School of Business.

All classes in the Lincoln Technical Institute are held in the evening and are especially designed to meet the needs of those who are employed during the day.

The Lincoln Technical Institute has its origin in the Northeastern Evening Polytechnic School. The latter received its title in 1901, when the work of various technical departments, such as the Department of Steam Engineering, the Department of Art, the Automotive School and the Department of Naval Architecture, were grouped together into curricula. By 1904 the School offered definite curricula, generally of three years' duration, in Architecture, Chemistry, Marine Engineering, Structural Engineering, Steam Engineering, along with courses in Art, Navigation, Surveying, Seamanship, and other related fields. In 1925 the title Lincoln Technical Institute was given to the Northeastern Evening Polytechnic School. At this time the Lincoln Technical Institute remodelled, lengthened, and consequently improved the former courses, offering a number of four-year curricula, which are described on pages 26 to 32.

In addition, provision was made so that students need not pursue a complete curriculum but could elect individual courses related to their present occupations, the only prerequisite of entry being ability to pursue the course with profit to themselves. At the present time there are nearly four hundred students receiving instruction in the Lincoln Technical Institute in the various branches of engineering.

Since 1936 the curricular courses of the Institute have been credited by Northeastern University Evening School of Business towards the Degree of Bachelor of Business Administration in Engineering and Management offered by that school.

Effective 1939 the Lincoln Technical Institute was empowered to award the Title of Associate in Engineering to those who satisfactorily complete any one of the prescribed curricula. Effective

with the Commencement Exercises, June, 1944, the Degree of Associate in Engineering has been awarded.

Because of war conditions and the part that women can play and are playing in the essential war industries, the courses have been made available to women students on the same basis as men.

The Officers of Administration are constantly alert to changing conditions and from time to time will modify existing courses to meet new needs and develop new courses so that real educational opportunities will be available to employed men and women at convenient evening hours. The School is sincerely interested in the problems of each student and the Dean and the officers of instruction encourage interviews for vocational and educational guidance.

The Lincoln Technical Institute has made it possible for many men to secure training which has enabled them to succeed in the work for which they are adapted by ability and interest.

FACULTY

THE STRENGTH of any educational institution lies in the quality of its faculty. This is especially true in a technical institute devoted to the training of mature men and women most of whom are already employed in their chosen professions.

The instructional staff of the Lincoln Technical Institute is composed of men who have an active interest in the welfare of ambitious evening school students. They are men of culture and high ideals and are well qualified by training and experience to teach in their respective fields.

HOLLIS BAIRD

Appointed 1945

Baird Receiver Company, 1925-28; Chief Engineer, Shortwave & Television Corporation, 1928-35; Chief Engineer, General Television Corporation 1935-41; Chief Engineer, World Wide Broadcasting Corporation, 1935-40; Consulting Engineer, World Wide Broadcasting Corporation, 1941-42; Instructor, Samuel Curtis Radio School, 1930-37; Instructor, University Extension, 1940-43; Instructor, ESMWT Program, Northeastern University, 1942-45.

Industrial Electronics, Communication Engineering, Frequency Modulation, Television
Chairman of the Department of Physics and Electronics Engineering

WALTER ALFRED BALDWIN

Appointed 1937

A.B. Ohio Wesleyan University, 1906; Graduate Study, University of Chicago and Harvard University; Head, Department of Mathematics, Chillicothe High School, Ohio, 1906-08; Head, Department of Mathematics, Mansfield High School, Ohio, 1908-10; Head, Science Department, Huntington School for Boys, Boston, 1912-14; Instructor in Physics and Chemistry, Lincoln Preparatory School, 1910—. Investigator and Consultant.

Chemistry

ROBERT OREN BATES

Appointed 1942

B.S. St. Lawrence University, 1937; Graduate Study, School of Education, Boston University, 1937 —; Teacher, Harrisburg Academy, 1938-40; Instructor, The Huntington School, 1940—.

Mathematics

FLETCHER S. BOIG

Appointed 1945

B.S. Tufts College, 1932; M.S. Massachusetts Institute of Technology, 1933; Ed.M. Tufts College, 1937; Statistician, Employers Liability, 1936-41; Paint Chemist, Wadsworth-Howland Company, 1941-42; Instructor in Chemistry, Northeastern University 1942—.

Organic Chemistry

Chairman of the Department of Chemistry

GUY ALBERT D'AMATO

Appointed 1944

Architectural Engineering, Massachusetts Institute of Technology, 1924-27; Structural Engineering, Lowell Institute, 1928-30; Architectural Draftsman, 1929-42; Instructor, Boston Public Schools, 1942-43; Instructor, Tufts College, 1943—.

Engineering Drawing

RAYMOND F. DAUER

A.B. Indiana University, 1934; Accounting and Auditing, General Electric Company, 1935-1939; Supervisor of Production Planning and Control, General Electric Company, 1939-1942; Supervisor Inventory Control, General Electric Company, West Lynn Works, 1942—; Taught ESMWT at Northeastern University, 1942-1945.

Production Planning and Control

JOHN JAMES DEVINE *Appointed 1939*
B.S. Rhode Island State College, 1927; Sc.M. Brown University, 1936; Engineer, New York Telephone Company, 1927-32; Assistant Engineering Instructor, Rhode Island State College, 1934-37; Instructor in Civil Engineering, Northeastern University, 1937-38; Instructor in Drawing, Northeastern University, 1938-41; Assistant Professor of Engineering Drawing, Northeastern University, 1941—.
Engineering Drawing

GILMORE COLBY DICKEY, JR. *Appointed 1944*
Associate in Engineering, Lincoln Technical Institute, 1943; Draftsman, 1940-42; Research Technician, 1942-43; Research Engineer, Massachusetts Institute of Technology, 1943—.
Electrical Laboratory

ROYAL MERRILL FRYE *Appointed 1930*
A.B. Boston University, 1911; A.M. Boston University, 1912; Ph.D. Boston University, 1934; Instructor in Boston University, 1913-16; Instructor in Department of Physics, Massachusetts Institute of Technology, 1916-31; Instructor in Physics, Worcester Polytechnic Institute, 1926-27; Assistant Professor of Physics, Boston University, 1931-42; Professor of Physics and Chairman of the Department of Physics, Graduate School, Boston University, 1942—.
Physics, Mathematics

WARREN L. GANONG
B.S. Northeastern University, 1937; Time Study Department, Converse Rubber Company, 1937-1938; Time Study Department, General Electric Company, 1938-1940; Instructor, Northeastern University, 1940—.
Time Study and Advanced Time Study
Chairman of the Department of Industrial Engineering

GEORGE WILLIAM HANKINSON *Appointed 1944*
B.A. Mount Allison University, New Brunswick, 1937; B.S. Northeastern University, 1942; Inspector, New York, New Haven & Hartford Railroad, 1939-42; Instructor, Civil Engineering, Northeastern University, 1942—.
Physics — Surveying

ELMER E. HASKINS *Appointed 1939*
B.M.E. Northeastern University, 1925; M.A. University of Pittsburgh, 1930; Ph.D. Boston University, 1938; Instructor, Monongahela High School, Pennsylvania, 1925-30; Associate Professor of Mathematics, Northeastern University, 1930—.
Advanced Mathematics
Chairman of the Department of Mathematics

HUGH HEALEY
S.B. Massachusetts Institute of Technology, 1934; Section Leader, Methods Department, General Electric Company, 1940—; Physics Instructor, Rindge Evening School, 1943-1944; Taught ESMWT at Northeastern University, 1944-1945.
Methods Engineering

ROBERT EDGAR HODGDON *Appointed 1927*
B.S. University of New Hampshire; M.S. Massachusetts Institute of Technology; Teacher in Mechanical Arts Department, Dover High School, New Hampshire, 1919-20; Teacher of Physics and Mathematics, Concord High School, New Hampshire, 1920-21; Training Assistant, United States Veterans Bureau, 1921-22; Instructor in Physics Department of Massachusetts Institute of Technology, 1922-33; Rindge Technical School, 1933—.
Engineering Drawing, Physics

WILFRED B. JOHNSTON
A.B. Harvard University, 1922; Instructor, Gardner High School, 1922-1924; Factory Planning Department, Heywood-Wakefield Company, 1924-1926; Personnel Director and Assistant Production Superintendent, Fisk Rubber Company, 1926-1930; Safety Engineer, Travelers Insurance Company, 1930—; Taught ESMWT at Northeastern University, 1944-1945.
Industrial Safety Engineering

RAYMOND M. KNIGHT

Appointed 1945

B.S. University of New Hampshire, 1929; Instructor Wentworth Institute, 1929—; Engineer, Submarine Signal Company, 1944—.

Mathematics

EDWARD E. KUYPERS

Graduate Columbia University, in Industrial Psychology and Personnel; Personnel Manager, Forstmann Woolen Mills; Director of Personnel Relations, General Cable Corporation; Director of Management-Labor Relations, First National Stores, Inc.; Taught ESMWT at Northeastern University, 1944-1945.

Labor-Management Relations

WILFRED S. LAKE

A.B. Hiram College, 1924; M.A. Harvard University, 1928; Ph.D. Harvard University, 1932; Instructor, Northeastern University, 1926-1929; Assistant Professor, 1929-1932; Associate Professor of Economics, 1932-1935; Professor of Economics, 1935-1939; Dean of the College of Liberal Arts at Northeastern University, 1939—.

Quality Control by Statistical Methods

HORATIO W. LAMSON

Appointed 1945

S.B. Massachusetts Institute of Technology, 1915; A.M. Harvard University, 1917; Instructor in evening schools and at Harvard and M.I.T., 1915-45; Research Engineer, General Radio Company, 1921-45.

Introduction to Electron Tubes

Electronic Tests and Measurements

HERBERT C. LANG

Appointed 1936

B.S. Northeastern University, 1934; Draftsman, Mason-Neilan Regulator Company, 1934-40; Chief Draftsman, Mason-Neilan Regulator Company, 1941; Instructor, ESMWT Program, Northeastern University, 1943-45.

Machine Design

JOHN ROBERT LEIGHTON

Appointed 1915

B.C.E. Northeastern University, 1914; Instructor, Northeastern University, 1914-17; Instructor, Northeastern Polytechnic School, 1915-27; Instructor, Lincoln Technical Institute, 1927—.

Applied Mechanics, Strength of Materials

WALDEMAR S. MCGUIRE

Appointed 1936

S.B. Massachusetts Institute of Technology, 1928; M.A. Boston University, 1930; Instructor at Tufts College, 1920-21; Instructor Rhode Island State College, 1921-24; Northeastern University, Associate Professor of Chemistry, 1924—.

Qualitative and Quantitative Chemistry

WENDELL EUGENE MATCHETT

Appointed 1944

B.S. University of Maine, 1936; M.S. University of Maine, 1937; Electrical Engineer, General Electric Company, 1937—.

Electricity III, Advanced Electrical Laboratory

LEODORE E. MAYNARD

Appointed 1945

B.S. Worcester Polytechnic Institute, 1922; Instructor Wentworth Institute, evening school, 1937-43; Electrical Engineer, Boston Edison Company, 1943-45; Instructor, ESMWT Program, Northeastern University, 1944-45.

Direct and Alternating Current Theory

GEORGE HARRIS MESERVE, JR.

Appointed 1929

B.C.E. Northeastern University, 1925; B.S. Northeastern University, 1931; Ed.M. Boston University, 1940; Junior Engineer, City of Medford, 1924-25; Draftsman, Boston Planning Board, 1925; Instructor in Drawing, Northeastern University, 1926-31; Assistant Professor of Drawing, Northeastern University, 1931-40; Associate Professor of Drawing, Northeastern University 1940—.

Engineering Drawing

Chairman of the Department of Drawing

ANDREW PETERSEN

B.B.A. Boston University, 1926; M.B.A. Boston University, 1932; Head of Accounting Department, University of Porto Rico, 1927-1929; Director of Accounting and Taxation, Babson Institute, 1929—; Accountant, Charles F. Rittenhouse and Company.

Accounting Aids to Management

WINFIELD C. POTTER

Appointed 1944

Ph.B. Brown University, 1910; Ed.M. Rhode Island College of Education, 1938; Instructor, Amherst High School, 1911-12; Instructor, Webster High School, 1912-1923; Principal, West Warwick High School, 1923-34; Principal, Foxboro High School, 1934—.

Sub-Freshman Mathematics

HOMER P. RANSOM

B.S. Northeastern University, 1936; Methods Department, General Electric Company, 1936-1941; Methods Supervisor, Methods Planning Department, General Electric Company, West Lynn Plant, 1941—; Taught ESMWT at Northeastern University, 1943-1945.

Methods Engineering

HENRY E. RICHARDS

Appointed 1921

B.S. 1918, M.S. 1937, Massachusetts Institute of Technology; Member of American Institute of Electrical Engineers; Member of Society for Promotion of Engineering Education; Ensign U. S. Naval Reserve, 1918; General Electric Company, 1911-21; Associate Professor of Electrical Engineering, Northeastern University, 1921—.

Chairman of the Department of Electrical Engineering

GUSTAV ROOK

Appointed 1941

B.S. Northeastern University, 1939; Graduate Study, Northeastern University, 1939—; Instructor in Drawing, Northeastern University, 1939—.

Machine Drawing

BARNET RUDMAN

Appointed 1942

A.B. Harvard University, 1921; Ed.M. Boston Teachers' College, 1934; Instructor in Mathematics, Rocky Grove High School, Franklin, Pennsylvania, 1921-23; Instructor in Mathematics, Pittsfield High School, 1923-28, Head of the Department of Mathematics, 1927-28; Instructor in Mathematics, South Boston High School, 1929-32; Instructor in Mathematics, English High School, 1932—.

Mathematics

ALBERT E. SANDERSON, JR.

Appointed 1936

B.C.E. Northeastern University, 1926; B.S. Northeastern University, 1940; Bethlehem Steel Company, 1927-30; Boston Bridge Works, 1930-35; Instructor in Civil Engineering, Northeastern University, 1938—.

Structural Drawing and Structural Design

CHARLES F. SEAVERNS

Appointed 1941

Harvard University, 1915-17; Instructor, Mathematics and Drawing, Huntington School for Boys, 1914-19; Instructor, Lincoln Preparatory School, 1914-40; A. E. Lincoln Technical Institute, Northeastern University, 1944; Instructor, Everett High School, 1925—.

Engineering Drawing

JOHN DAVID SHORE

Appointed 1926

S.B. Massachusetts Institute of Technology, 1912; Ed.M. Boston Teachers' College, 1940; Architectural Draftsman, 1916-21; Instructor, Franklin Union, Boston, 1921-24; Head of Department of Mechanical Drawing, United States Vocational School, Portland, Maine, 1924-25; Instructor in Mathematics and Mechanical Drawing, English High School, 1925—.

Sub-Freshman Mathematics

ERNEST L. SPENCER

Appointed 1941

B.S. Northeastern University, 1936; Graduate Study, Harvard University Graduate School of Engineering, 1939—; Engineer, Everett M. Brooks, Jackson and Moreland, Massachusetts State Department of Public Works, 1936-39; Instructor in the Department of Civil Engineering, Northeastern University, 1939—.

Concrete, Concrete Design, Hydraulics, Highway Engineering

Chairman of the Department of Civil Engineering

FREDERICK ARLINGTON STEARNS

Appointed 1921

B.S. 1917, M.S. 1934, Massachusetts Institute of Technology; Member of American Society of Mechanical Engineers; Member of Society for Promotion of Engineering Education; Member of the Engineering Societies of New England; United States Army, 1917-19; Instructor, Massachusetts Institute of Technology, 1920; Professor in the Department of Mechanical Engineering, Northeastern University, 1920—.

Heat Engineering, Mechanical Engineering Laboratory

EMERSON WOOD THOMAS

Appointed 1945

B.S. in E.E. George Washington University, 1937; 2nd Inspector, American District Telephone Company, 1937; Laboratory Instructor, Capitol Radio Engineering Institute, 1938-40; Assistant Radio Inspector, U. S. Navy, 1940-41; Inspector Engineering Materials, U. S. Navy, 1941; Chief Instructor of Theory, Capitol Radio Engineering Institute, 1941-43; Instructor in Charge, Capitol Radio Engineering Institute, 1943-44; Radio Research Engineer, Tobe Deutschmann Corporation, 1944-45; Instructor in ESMWT Program, Northeastern University, 1945.

Electron Tubes and Circuits

RALPH E. WELLINGS

Appointed 1944

A.B. Boston College, 1920; A.M. Boston College, 1925; Ed.M. Boston Teachers' College, 1930; Teacher, Brighton High School, 1925-28; Teacher, Dorchester High School for Boys, 1928-1944.

Mathematics, Physics

ALBERT E. WHITTAKER

Appointed 1936

B.M.E. Northeastern University, 1924; Ed.M. Harvard University, 1932; B.S. Northeastern University, 1933; Graduate Study, Boston University, 1934-37; Member of American Society of Mechanical Engineers; Member of Society for Promotion of Engineering Education; Member of the Engineering Societies of New England; Assistant Professor of Mechanical Engineering, Northeastern University, 1924—.

Mechanism

LAWTON D. WOLF

B.B.A. Rider College, 1932; Statistician, Stokes Rubber Company, 1933-1936; Production Control, Thermoid Company, 1936-1941; Materials Control, Wright Aeronautical Company, 1941-1943; Head Production Control Department, Holtzer-Cabot Company, 1943—; Taught ESMWT at Northeastern University, 1943-1945.

Production Planning and Control

CHESTER HENRY WOLOWICZ

Appointed 1938

B.S. Northeastern University, 1937; Western Electric Company, 1937-38; Jamison Cold Storage Door Company, 1938; Assistant Professor, Mechanical Engineering, Northeastern University, 1938—.

Aerodynamics, Aeronautical Laboratory, Airplane Design, Airplane Engines

Chairman of the Department of Mechanical Engineering

HARRY E. A. WRIGHT

Appointed 1943

B.S. Lafayette College, 1934; Application Engineer, Westinghouse Electric and Manufacturing Company, 1934—.

Electricity II

GENERAL INFORMATION

STUDENT BODY

THE STUDENTS of the Lincoln Technical Institute are men and women of earnest purpose and firm endeavor who bring to bear on their work a thoroughness which promises future success. Their ages last year ranged from seventeen to fifty-one, the average age being twenty-four years. Almost all the students are engaged in work during the day and many different occupations have their representatives in the student body, a fact which demonstrates that the School can be of service to men in many walks of life. Some students are preparing to enter engineering work; many are already engaged in engineering work and are studying to prepare themselves for increased responsibility and rewards.

GEOGRAPHICAL DISTRIBUTION OF STUDENTS

During the school year 1944-1945 the following cities and towns were represented in the student body of the Lincoln Technical Institute.

Allston	Haverhill	Roslindale
Arlington	Hingham	Roxbury
Ashland	Hudson	Salem
Auburndale	Hyde Park	Salem Depot, N. H.
Belmont	Ipswich	Saugus
Beverly	Jamaica Plain	Sherborn
Billerica	Lawrence	Somerville
Boston	Lexington	South Easton
Braintree	Lowell	Squantum
Brighton	Lynn	Stoneham
Brockton	Malden	Swampscott
Brookline	Manchester	Taunton
Cambridge	Mansfield	Wakefield
Canton	Mattapan	Walpole
Charlestown	Maynard	Waltham
Chartley	Medford	Watertown
Chelmsford	Medway	Wellesley
Danvers	Melrose	Wellesley Hills
Dedham	Methuen	West Acton
Dorchester	Middleton	West Bridgewater
East Boston	Milford	West Newton
East Braintree	Milton	West Roxbury
East Walpole	Needham	West Somerville
East Weymouth	Newton	Westfield
Everett	North Quincy	Whitman
Fall River	Norwood	Wilmington
Fitchburg	Orient Heights	Winchester
Foxboro	Peabody	Winthrop
Framingham	Quincy	Woburn
Gardner	Reading	Wollaston
Hanover Center	Revere	Woonsocket, R. I.

HIGH SCHOOLS REPRESENTED

During the year 1944-1945 the following high schools and preparatory schools were represented in the student body:

Abbot Academy	Hallowell	Poland Central, N. Y.
Admiral Farragut Academy	Haverhill	Portugal
Andover	Henrietta, N. Y.	Quincy
Angel Guardian	Hollis	Quincy Trade
Arlington	Holten	Reading
Attleboro	Howard	Revere
B.M.C. Durfee	Hudson	Rindge Technical
Belmont	Huntington	Roslindale
Belmont Hill	Hyde Park	Roxbury Memorial
Beverly	Ipswich	Rutland, Vt.
Boston College	Jamaica Plain	St. Clement
Boston English	Jeremiah E. Burke	St. John's
Boston Public Latin	Lansingburgh	St. Mary's
Boston Trade	LaSalle Academy, R. I.	Salem
Braintree	Lawrence	Saugus
Brighton	Leominster	Scituate
Brockton	Lincoln Preparatory	Searles
Brookline	Lisbon, Portugal	Sewanhaka, N. Y.
Bulkeley, Connecticut	Lowell	Shelburne, Canada
Cambridge High & Latin	Lynn Classical	Sherborn
Canton	Lynn English	Somerville
Central, Penn.	Malden	South Boston
Central, Tenn.	Malden Catholic	Steele
Central Evening	Manchester, N. H.	Stetson
Chapman Technical, Conn.	Mansfield	Story
Charlestown	Maynard	Sunapee Central, N. H.
Chelmsford	Mechanic Arts	Swampscott
Chelsea	Medford	Taunton
Clark, Maine	Medway	Thornton
Commerce	Melrose	Tilton
Concord, N. H.	Memphis Technical, Tenn.	Vienna, Austria
Cornish, Maine	Miami Edison, Fla.	Walpole
D. S. Jordan, Cal.	Milford	Waltham
Dewitt Clinton Hebbard	Millburn, N. J.	Warren Harding, Conn.
Dorchester	Milton	Washington Irving, N. Y.
East Boston	Mission	Watertown
Eastern, Michigan	Moncton, N. B.	Wellesley
Everett	Mytilay, Greece	Westfield
Fall River	Nashua, N. H.	Weymouth
Fitchburg	Needham	White Plains, N. Y.
Foxboro	New Bedford	Whitesboro, N. Y.
Framingham	Newton	Whitman
Franklin	Newton Trade	Winchester
Gardner	North Quincy	Winthrop
General Draper	Norton	Woburn
Girls' Latin	Norwalk, Conn.	Woodbury
Greenfield	Norwood	Woonsocket, R. I.
Groveton, N. H.	Pawtucket, R. I.	Yarmouth Academy, N.S.
	Peabody	

THE CAMPUS

THE LINCOLN TECHNICAL INSTITUTE is affiliated with Northeastern University and enjoys the use of all the excellent classrooms and modern laboratory facilities. It is easily reached from the

North and South Stations, and from the various points of the Boston Elevated System since it is situated at the entrance of the Huntington Avenue Subway.

The work of the School is carried on in the following buildings:

RICHARDS HALL contains the administrative headquarters of the Institute. The major portion of the building is given over to laboratory and classroom areas. Laboratory space is provided for the following: Mechanical Engineering, General and Advanced Physics, Inorganic, Organic, Analytical, Radio and Physical Chemistry, together with several research laboratories. It also contains several well-equipped drawing rooms extensively used for courses in drafting and designing which form so important a part in technical work.

THE NEW BUILDING, completed in 1941, contains the Chemical Engineering and Biological Laboratories, student activities rooms, classrooms, conference rooms and lecture halls for meetings of professional engineering societies.

THE EAST BUILDING houses the University Library, a chemistry laboratory, several classrooms and the Business Administration Laboratory.

THE SOUTH BUILDING is largely devoted to work in Electrical and Civil Engineering. Here is located the Sanitary, Concrete, Photogrammetric, Electronics, and Electrical Measurements and Dynamo Laboratories in addition to department offices, classrooms and conference rooms.

TRANSPORTATION

THE RAILROAD SYSTEMS entering Boston issue students' tickets to students under twenty-one years of age. Applications for these may be obtained at a railroad office and must be presented at the school office for signature.

The Administrative Office will do everything possible to make share-the-ride arrangements among members of the student body to accommodate those who have transportation problems.

The local ration boards have co-operated in providing supplementary gasoline for students taking technical training of value to the war effort.

LIBRARY AND STUDY AREAS

THE UNIVERSITY LIBRARY, located in the East Building, is well equipped in technical literature and is available for use of students

of the Institute. The reading rooms are open from 9:00 A.M. to 7:30 P.M. on weekdays, and from 9:00 A.M. to 1:00 P.M. on Saturdays. The privilege of obtaining books from the Boston Public Library is extended to students of the Institute. Applications for this privilege should be made at the Administrative Office of the Institute where the necessary blanks may be obtained.

Adequate study areas are available in the Library and New Building for student use.

TEXTBOOKS AND SUPPLIES

THE UNIVERSITY BOOKSTORE is operated for the convenience of the student body. All books and supplies which are required by the students for their work in the Institute may be purchased at the Bookstore. Students taking Engineering Drawing should be prepared to expend a sum of approximately \$5.00 for drawing supplies, exclusive of the cost of a satisfactory set of drawing instruments.

VISITORS

Visitors are always welcome at one class session in any department. Those who wish to visit any of the classes should call at the school office and obtain a visitor's card signed by the Dean.

SCHOLARSHIPS

The Executive Council has made available a few scholarships to assist needy students of good mental capacity who, because of financial limitations, might be deprived of educational opportunities. The award when a scholarship is granted may range up to one-half of the cost of tuition for the year depending upon the student's need and scholastic achievement.

AWARDS FOR SCHOLASTIC ACHIEVEMENTS

For the school year 1945-46 the Executive Council has offered the following scholarships. To the highest ranking Sub-Freshman, Division A and B Freshman, Sophomore and Junior who returns for the following school year a scholarship of \$60. To the second highest ranking Sub-Freshman, Division A and B Freshman, Sophomore and Junior who returns for the following school year a scholarship of \$30. These scholarships will be awarded only to students pursuing a full program for the Degree of Associate in Engineering.

The winners of these scholarships for the past school year were:

Sub-Freshman First, Donald W. Kilbrith
Second, Edward A. Richardson

Freshman
Division A *First*, George Spigel
Second, John D. Prescott

First, Irving B. Ruggles
Second, Angela D. Pingle

Sophomore First, Earle D. Hardy
Second, Henry K. Rixford

Junior *First, Roy W. Lindgren*
 Second, Alphonse Paulavich

REQUIREMENTS FOR ADMISSION

REGULAR STUDENTS

Applicants for admission who present evidence of completion of an approved secondary school course, or the equivalent of fifteen units (including one unit in Algebra and one in Plane Geometry) may be admitted as regular students, candidates for the Degree of Associate in Engineering and also eligible to proceed later, if they so desire, to the Degree of Bachelor of Business Administration in Engineering and Management offered by Northeastern University Evening School of Business.

CONDITIONED STUDENTS

Because of the war emergency and the great need for technically trained men, the Institute will admit as conditioned students certain applicants who, although they are not high school graduates, have completed such secondary school work as embraces one unit of Algebra and one of Plane Geometry, and who in the opinion of the Committee on Admissions can profit by the work offered.

These students, upon satisfactory achievement, may be reclassified as regular students and become eligible to receive the Degree of Associate in Engineering.

SPECIAL STUDENTS

Students who wish to register for a special program or for single courses will be admitted as special students, not candidates for the diploma or Degree, provided their previous education and training permit them to pursue the courses with profit.

Programs are planned to meet individual needs and should prove of benefit to those who wish rapid and immediate knowledge of certain fields, whether to supplement former training or to obtain preparation which will permit them to enter a new line of endeavor.

LATE REGISTRATION

Students should avoid late registration. Those who find it necessary to register late may be permitted to enter the School provided that they have not lost so much work as to render it unlikely that they will succeed in their courses. *No deduction from tuition fees is made because of late enrollment.*

CLASSIFICATION OF STUDENTS

DIVISION A

Students who enter school at the beginning of the normal school year in September are termed Division A students. Programs for these students can be arranged so that the work of the school year is completed by May or in early June by attendance three evenings a week. Students, however, may elect to carry a lighter scholastic load than the regular program. Summer courses are not necessary for Division A students.

DIVISION B

Students entering school in January are termed Division B students. These students terminate the first part of their studies by the end of May, attending three evenings a week. However, to complete the work of the Freshman year, it is necessary that they attend a summer course which meets for two evenings a week. Students pursuing this program may continue with the Sophomore program in September of the year in which they enter school, and thereafter attend during the normal school year.

Summer attendance is not compulsory, but in the event that a student does not pursue a summer course, attendance is necessary over a period of five school years to complete graduation requirements.

SUB-FRESHMEN

Students who have not completed Algebra and Geometry, or those who wish to review these subjects because of the remoteness of their former period of study are termed Sub-Freshmen. Their course will consist of Algebra and Geometry and the Freshmen courses in Engineering Mathematics and Engineering Drawing. These courses begin in September and extend for thirty-two weeks. During the Summer Term the program consists of the Freshman course in Physics.

Students who complete these courses will be admitted to the work of the Sophomore year. This program permits them to save a year which would otherwise be lost, since it enables them to graduate in the customary period of four years.

Students are admitted to this course only after a personal interview with the Dean.

ADMINISTRATIVE REGULATIONS

APPLICATIONS FOR ADMISSION

Applications for admission should be filed as early as possible in order that the necessary investigations may be made and the status of each student definitely determined before the opening day.

REGISTRATION

Each student is required to present himself at the school office, and to have his course approved by the Dean or his assistants and to complete his registration. A student is expected to pay the first tuition installment and other fees required before beginning attendance.

Late registration will be permitted only at the discretion of the Dean.

THE SCHOOL YEAR

The school year is divided into two semesters of seventeen weeks each. The first semester extends from September 17 to January 25, and the second semester from January 28 to May 24, except that make-up sessions for public holidays may extend either term. Attention is drawn to the fact that Division B students begin their studies on January 7.

GRADUATION REQUIREMENTS

Students may register for single subjects or for complete courses provided such registration meets with the approval of the Dean; but to receive the Degree of Associate in Engineering the student must fulfill the following conditions:

- a. He must complete all the courses of his particular curriculum, either by attendance at this Institute, or by receiving advanced standing credit for those courses, or the equivalent of those courses, as determined by the Dean.
- b. He must pass such final examinations as are required in the courses he has pursued. The various curricula have been arranged so that the courses can be completed in four years. However, an extension of time will be granted to those who wish to take longer to meet the requirements for graduation.

- c. Regardless of the advanced standing credit he receives, he must have been in attendance for at least a year preceding the date on which he expects to graduate; that is, he must complete at least one full year's work in the Lincoln Technical Institute.

SESSIONS

Classes meet on weekday evenings. There are no classes on Saturdays. A full schedule will include three evenings a week. As a rule classes are scheduled from 7 p.m. till 9 p.m., although occasionally classes continue until 9.30 p.m. Laboratory periods in Chemistry are of three hours' duration.

ATTENDANCE REQUIREMENTS

A careful record of attendance upon class exercises is kept for each student. Absence from regularly scheduled classes on any subject will seriously affect the standing of the student. It may cause the removal of certain subjects from his schedule and the listing of these as "conditioned subjects." However, if reasonable excuse for absence be presented, the student may be allowed to make up the time lost, and be given credit for the work; but he must complete the work at such time and in such manner as his instructor in the course shall designate.

Students who are unavoidably absent from class may receive the home work assignments by telephoning the school office.

A minimum attendance record of 75 per cent must be maintained in all classes before a student will be admitted to examination.

EXAMINATIONS AND QUIZZES

Examinations and quizzes are held throughout the term at the discretion of the instructors. Quizzes are to be made up at the discretion of the instructor. The fee for each make-up quiz is \$1.50. Final examinations are required upon the completion of all courses. The following system of grading is used:

- A — 90 to 100 — Excellent
- B — 80 to 89 — Good
- C — 70 to 79 — Fair
- D — 60 to 69 — Lowest Passing Grade
- F — 50 to 59 — Conditioned Failure
- FF — Below 50 — Complete Failure

A student marked "F" in a final examination may receive one special examination. If he fails in that, he must repeat the course. It is to be noted that a student whose grade is "F" *must petition for re-examination*. Permission to take a make-up examination is a privilege, not a right, and is dependent upon the quality of work the student has done throughout the course. Conditioned or make-up examinations are given in September before the opening of the next school year.

A student marked "FF" must repeat the course. The fee for each special examination is \$3. Grades and reports are mailed to the students and will not be given out at the school office. Under no circumstances will grades be given over the telephone.

It is to be noted that no student will be permitted to graduate who does not maintain a "C" average and that students who have not maintained such an average by the end of the Sophomore year will not be permitted to continue in school.

TRANSFERS

Students are not permitted to change from one course to another without first consulting the Dean and receiving a Transfer Order signed by him.

REPORTS OF STANDING

An informal report of the student's standing is issued at the end of the eleventh and the twenty-second week; and the formal report, covering the year's record, is issued at the close of each year.

In the case of students who are under twenty-one years of age, reports may be sent to parents in the event of unsatisfactory work on the part of the student, non-compliance with administrative regulations, continued absence, and withdrawal. Parents of minors may obtain reports at any time on request.

STUDENTS ADMITTED WITH ADVANCED STANDING

Students who, upon admission, were granted provisional advanced standing credit, but did not present evidence of their eligibility to such credit, may not continue in school unless their credentials are presented to the Dean before the close of the first semester. The School is glad to aid students in obtaining transcripts of record.

METHODS OF INSTRUCTION

Instruction is given by means of lectures, recitations, laboratory work, and practical work in the drawing rooms. Great value is set upon the educational effect of these exercises, which constitute the foundation of each of the courses. Oral and written examinations are held at the discretion of the instructors.

The attention of every student is drawn to the fact that home assignments must be dutifully done and written work submitted as assigned if the student's grade is not to be seriously affected. Wilful disregard of this matter will result in disciplinary action by the Administrative Officers.

SUBJECTS OF INSTRUCTION

On pages 43 to 58 will be found a detailed statement of the scope of the subjects offered in the various courses. The subjects are numbered for convenience of reference in consulting the various curriculum schedules.

Required courses, and those prerequisite thereto, must have been successfully pursued before any advanced course may be taken.

TUITION AND OTHER FEES

MATRICULATION FEE

A matriculation fee of \$5 must accompany the initial application for admission to the Institute. This fee is returned when the student is refused admission.

TUITION

Tuition fees are based on a charge of \$10 a semester hour. The student may determine his cost for tuition by consulting the Programs of Instruction shown on pages 26 to 32 where the semester hour credit for each course is indicated. The schedule for payments for the year is as follows:

Division A Students

The first payment is due during the first week of school and the other three during the weeks of November 12, January 28, and March 11.

Division B Students

The first payment is due during the week of registration and the second during the week of March 18. The summer term payment is due during the week of registration in June.

Sub-Freshmen Students

The tuition charges for sub-freshmen students will be at the rate of \$10 a semester hour with \$30 additional for Review Algebra and Plane Geometry. The first payment is due during the week of registration and the other four payments during weeks of November 12, January 28, and March 11 and during the week of registration of the summer program.

DEFERRED PAYMENT PRIVILEGE

Students who find considerable difficulty in meeting payments according to the schedule specified above may make other payment arrangements upon consultation with the Dean.

UNIVERSITY FEE

All students will pay, in addition to tuition and laboratory fees, a University fee based on the program they are carrying.

For students enrolled in three full courses	\$10
For students enrolled in two full courses	7
For students enrolled in one full course	3

LABORATORY FEES

All students taking courses which require laboratory work are charged laboratory fees in accordance with the following rates:

Aeronautical Laboratory	\$ 5
Analytical Chemistry Laboratory	15
Electrical curriculum 2nd, 3rd, 4th years — per year	5
Electronic curriculum 2nd, 3rd, 4th years — per year . . .	5
Mechanical Engineering Laboratory	5
Inorganic Chemistry Laboratory	15
Organic Chemistry Laboratory	15

Laboratory fees for students taking individual courses, excepting chemistry laboratory, are \$2.50 per semester. The fee for chemical laboratory for individual course students is \$7.50 per semester.

Laboratory fees are not returnable.

For students taking Chemistry there is in addition a Chemistry laboratory deposit of \$5, the unused portion of which will be refunded after deductions for breakages and non-returnables.

SPECIAL EXAMINATION FEES

The fee for each special examination for advanced standing, for conditioned students, or for students who have for justifiable cause omitted to take the regular scheduled examinations is \$3. The fee must be paid before the examination is taken.

GRADUATION FEE

On completing the curricular requirements for the Degree of Associate in Engineering the student will pay a graduation fee of \$10. This fee must be paid by May 15 in the year of the student's graduation.

REFUND POLICY

Students who are forced to withdraw from a course or from the Institute are expected to notify the Administrative Office by completing the withdrawal blank which will be furnished. Requests for a refund must be filed within forty-five days after withdrawal. For causes deemed adequate by the Committee on Withdrawals the balance of the tuition paid after the following charges have been made will be refunded:

Thirty-four-week courses — four per cent of the total charges for each week of attendance in each semester.

Twenty-week courses — six per cent of the total charges for each week of attendance each half term.

Seventeen-week courses — eight per cent of the total charges for each week of attendance.

The same charges are applicable in the event that a student abandons a part of his program. In addition the full Laboratory Fee is charged in those cases where a student is pursuing a laboratory course.

PROGRAMS OF INSTRUCTION

LEADING TO THE DEGREE OF ASSOCIATE IN ENGINEERING

The Lincoln Technical Institute offers four-year courses in Chemistry, Civil and Structural Engineering, Electrical Engineering, Electronic Engineering, Industrial Engineering and Mechanical Engineering, the last of which is also available with an Aeronautical option. Schedules of the various curricula are given on the following pages.

On the satisfactory completion of a prescribed four-year course the Degree of Associate in Engineering is awarded to all regular students.

All these courses are of strictly college grade. In those cases where students are unable, because of circumstances, to carry all of the work prescribed in any year, an extension of time will be granted by the Dean, who will determine which subjects shall be excluded, and also the order in which the omitted subjects shall later be studied.

When a student elects a curriculum he is expected to complete all the subjects in that curriculum in order to receive the Degree unless he has the permission of the Dean to drop or omit certain subjects and substitute others for those omitted.

Graduation from these programs carries four years' credit towards a six-year program leading to the Degree of B.A.A. in Engineering and Management offered by Northeastern University Evening School of Business.

SPECIAL COURSE IN CHEMISTRY

Leading to a Diploma

FIRST YEAR					
First Semester			Second Semester		
Course No.	Course	Class Hours	Course No.	Course	Class Hours
* Ch1	General Chemistry.....	2½	Ch2	General Chemistry.....	2½
ChL1	General Chem. Lab.....	3	ChL2	General Chem. Lab.....	3
		5½			5½
SECOND YEAR					
* Ch3	Qualitative Chemistry...	2½	Ch4	Quantitative Chemistry.	2½
ChL3	Qualitative Chem. Lab...	3	ChL4	Quantitative Chem. Lab.	3
		5½			5½
THIRD YEAR					
* Ch5	Organic Chemistry.....	2½	Ch6	Organic Chemistry.....	2½
ChL5	Organic Chem. Lab.....	3	ChL6	Organic Chem. Lab.....	3
		5½			5½

An additional course, Industrial Chemistry, Lectures and Laboratory, will be offered in any year if sufficient students desire it.

These courses carry credit towards the Degree of Associate in Engineering and the Degree of B.B.A. in Engineering and Management offered by Northeastern University Evening School of Business.

Students wishing to pursue programs for the Degree should consult the Dean regarding particulars.

* No credit allowed until completion of second semester.

CHEMISTRY

Leading to the Degree of Associate in Engineering

The Sciences of Chemistry and Chemical Engineering have undergone a marked development in recent years. It has grown out of the discoveries of the chemical laboratories which have launched many new industries whose production processes involve chemical as well as physical change. The chemist is in demand and his aid is sought in the operation of plants producing drugs, oils, rayon and cellophane, plastics and various synthetic products resulting from intensive research during the war. The chemist may assist in the creation of more economical manufacturing processes, promote the development of manufacturing by-products, and be instrumental in the discovery of new products in the research laboratories.

In addition to the fundamental courses in chemistry, mathematics, and physics, a considerable amount of time is devoted to more advanced work in chemistry. Since the field is so varied, the curriculum has been designed to give the students a broad training rather than a specialized training in one specific industry.

FIRST YEAR					
First Semester			Second Semester		
Course No.	Course	Class Hours	Course No.	Course	Class Hours
M1	Algebra.....	2½	M2	Trigonometry.....	2½
P1	Physics I.....	2½	P2	Physics II.....	2½
* D1	Engineering Drawing....	2½	D2	Engineering Drawing....	2½
		7½			7½
SECOND YEAR					
M3	Analytical Geometry }	2½	M6	Integral Calculus.....	2½
M5	Differential Calculus }	2½	Ch2	General Chemistry.....	2½
* Ch1	General Chemistry.....	2½	ChL2	General Chem. Lab.....	3
ChL1	General Chem. Lab.....	3			
		8			8
THIRD YEAR					
ME1	Applied Mechanics I....	2½	ME2	Applied Mechanics II...	2½
* Ch3	Qualitative Chemistry .	2½	Ch4	Quantitative Chemistry..	2½
ChL3	Qualitative Analysis Lab.	3	ChL4	Quantitative Analysis Lab.	3
		8			8
FOURTH YEAR					
**	Engineering Elective....	2	**	Engineering Elective....	2
* Ch5	Organic Chemistry.....	2½	Ch6	Organic Chemistry.....	2½
ChL5	Organic Chem. Lab.....	3	ChL6	Organic Chem. Lab.....	3
		7½			7½

* No credit allowed until completion of second semester.

** Among the elective subjects deemed desirable are Heat Engineering, Electricity and Machine Drawing, Physical Chemistry.

CIVIL AND STRUCTURAL ENGINEERING

Leading to the Degree of Associate in Engineering

The field of Civil Engineering has to do with the planning and building of all kinds of structures and public works. Today its major branches include topographical, municipal, railroad, highway, structural, hydraulic, and sanitary engineering. It covers land surveying, the building of railroads, soil mechanics, harbors, docks, the construction of sewers, water works, streets and highways, the design and construction of flood control projects, bridges, buildings, walls, foundations, and all fixed structures.

This curriculum is designed to offer the relatively compact body of principles upon which all work in Civil Engineering depends. It is intended to prepare the young civil engineer to take up the work of design and construction of structures, to solve the problems of water supply, and to undertake intelligently the supervision of work in allied fields of engineering and general contracting.

FIRST YEAR					
First Semester			Second Semester		
Course No.	Course	Class Hours	Course No.	Course	Class Hours
M1	Algebra	2½	M2	Trigonometry	2½
*D1	Engineering Drawing...	2½	D2	Engineering Drawing...	2½
P1	Physics I	2½	P2	Physics II	2½
		7½			7½
SECOND YEAR					
M3	Analytical Geometry }	2½	M6	Integral Calculus	2½
M5	Differential Calculus }	2½	ME2	Applied Mechanics II...	2½
ME1	Applied Mechanics I...	2½	CE2	Surveying II	2½
*CE1	Surveying I	2½			
		7½			7½
THIRD YEAR					
*ME3	Strength of Materials I ..	2½	ME4	Strength of Materials II.	2½
CE3	Highway Engineering...	2	CE4	Hydraulics	2½
*CD1	Structural Drawing I...	2½	CD2	Structural Drawing II...	2½
		7			7½
FOURTH YEAR					
*CE5	Engineering Structures I.	2½	CE6	Engineering Structures II	2½
CE7	Concrete	2	CE8	Concrete Design	2
*CE9	Structural Design I	2½	CE10	Structural Design II....	2½
		7			7

* Credit not allowed until completion of second semester.

ELECTRICAL ENGINEERING**Leading to the Degree of Associate in Engineering**

The profession of electrical engineering affords a wide diversification of employment opportunities. The electrical industry and the field of electrical engineering are usually divided into two main branches, one having to do with electrical power and the other, communications. The power group deals principally with large equipment and apparatus employing heavy currents; the communications group handles small, more delicate equipment employing small, even minute currents. Electrical engineering thus embraces the generation, transmission, and distribution of electricity for light and power purposes, the operation of electric railways, the design, construction, and operation of all types of electrical equipment including telephone, telegraph, and radio apparatus as well as lamps, motors, etc.

This course provides a good theoretical background with practical applications. Instruction is carefully planned and the time divided among recitations, lectures, laboratory tests, homework, and reports.

FIRST YEAR					
First Semester			Second Semester		
<i>Course No.</i>	<i>Course</i>	<i>Class Hours</i>	<i>Course No.</i>	<i>Course</i>	<i>Class Hours</i>
M1	Algebra	2½	M2	Trigonometry	2½
P1	Physics I	2½	P2	Physics II	2½
EE1	Direct Current Theory . .	2	EE2	Alternating Current Theory	2½
		7			7½
SECOND YEAR					
M3	Analytical Geometry } . .	2½	M5	Integral Calculus	2½
M4	Differential Calculus } . .	2½	EE4	Direct Current Machinery II	2½
EE3	Direct Current Machinery I	2½	ME2	Applied Mechanics II . . .	2½
ME1	Applied Mechanics I	2½			7½
		7½			7½
THIRD YEAR					
EE5	Alternating Current Machinery I	2½	EE6	Alternating Current Machinery II	2½
* ED1	Electrical Drafting	2½	ED2	Electrical Drafting	2½
* ME3	Strength of Materials	2½	ME4	Strength of Materials	2½
		7½			7½
FOURTH YEAR					
* ME5	Heat Engineering	2	ME6	Heat Engineering	2
EE7	Electricity III	2	EE8	Electricity IV	2½
EL1	Advanced Elec. Lab. I . . .	2½	EL2	Advanced Elec. Lab. II . .	2½
		6½			7

* No credit allowed until completion of second semester.

ELECTRONIC ENGINEERING

Leading to the Degree of Associate in Engineering

This course is designed to train students for the various branches of the field of Electronics. The new advancements in the fields of radio, television, radar, and sonar created by the urgencies of war have opened up greater opportunities for intellectual pioneering in these fields of engineering than in other branches of the profession.

Since electron tubes and circuits function around the principles of Electricity, this subject is adequately treated in the first two years of the course. After a thorough study of the various types of electron tubes and their basic circuits in the second and third years, the fourth year is devoted to the various important fields that the student may wish to enter, such as Industrial Electronics, Communications, Broadcast Stations, and the new fields of Frequency Modulation and Television.

The whole course is a good balance between theory and practice, and experiments involving electron tubes and their applications are used through the entire last three years of the course. Laboratory reports and home work problems are used to supplement the experiments and lectures so that the student will absorb the material in a thorough manner.

FIRST YEAR					
First Semester			Second Semester		
Course No.	Course	Class Hours	Course No.	Course	Class Hours
M1	Algebra	2½	M2	Trigonometry	2½
P1	Physics I	2½	P2	Physics II	2½
EE1	Direct Current Theory . .	2	EE2	Alternating Current Theory	2½
		7			7½
SECOND YEAR					
M3	Analytical Geometry } . .	2½	M5	Integral Calculus	2½
M4	Differential Calculus } . .	2½	**EE10	Electron Tubes and Circuits I	5
EE3	D.C. Machinery I	2½			
EE9	Intro. to Electron Tubes . .	2½			
		7½			7½
THIRD YEAR					
EE5	A. C. Machinery I	2½	ED2	Electronic Drafting	2½
* ED1	Electrical Drafting	2½	**EE12	Communication Engineering I	5
EE11	Electron Tubes and Circuits II	2½			
		7½			7½
FOURTH YEAR					
**EE13	Communication Engineering II	5	**EE14	Freq. Modulation and Television	5
EE15	Industrial Electronics I . .	2½	EE16	Industrial Electronics II .	2½
† EE17	Electronic Test Equipment and Measurement I	2½	† EE18	Electronic Test Equipment and Measurement II	2½
		7½			7½

* No credit allowed until completion of second semester.

** Two nights per week.

† This course may be substituted for EE15-16.

INDUSTRIAL ENGINEERING**Leading to the Degree of Associate in Engineering**

Meeting the tremendous production requirements of World War II has called for every economy of time in man and machine hours to produce the maximum output. The scientific approach to the problems of industrial management has created an increasing demand for those trained in engineering and in the fundamentals of industrial management to assume administrative responsibility.

The competition of the postwar period will require continued emphasis on this phase of management and provide many opportunities for trained personnel in methods engineering, time study, production planning and control and other phases of industrial relations pertaining to men and machines.

FIRST YEAR					
First Semester			Second Semester		
Course No.	Course	Class Hours	Course No.	Course	Class Hours
M1	Algebra.....	2½	M2	Trigonometry.....	2½
D1	Engineering Drawing....	2½	D2	Engineering Drawing....	2½
P1	Physics.....	2½	P2	Physics.....	2½
		7½			7½
SECOND YEAR					
M3	Analytical Geometry }	2½	M6	Integral Calculus.....	2½
M5	Differential Calculus }		ME2	Applied Mechanics.....	2½
ME1	Applied Mechanics.....	2½	IE2	Methods Engineering....	2½
IE1	Job Evaluation and Merit Rating.....	2			
		7			7½
THIRD YEAR					
ME3	Strength of Material.....	2½	ME4	Strength of Material.....	2½
MD1	Machine Drawing.....	2½	MD2	Machine Drawing.....	2½
IE3	Production Planning and Control.....	2½	IE4	Time Study.....	2
		7½			7
FOURTH YEAR					
ME9	Machine Design.....	2	ME10	Machine Design.....	2
ME5	Heat Engineering.....	2	ME6	Heat Engineering.....	2
* IE5	Accounting Aids to Management.....	2½	* IE6	Accounting Aids to Management.....	2½
* IE7	Labor-Management Relations.....	2	* IE8	Industrial Safety Engineering.....	2½
* IE9	Quality Control by Statistical Method.....	2½	* IE10	Advanced Time Study...	2½
		6½			6½

* Fourth year students may select one of the starred courses in each semester.

MECHANICAL ENGINEERING

Leading to the Degree of Associate in Engineering

The field of mechanical engineering is concerned with the harnessing of our power resources by means of machinery to form useful work. In contrast to the civil engineer who deals primarily with static forces, the mechanical engineer is more concerned with the mechanics of motion or kinetics. And because moving parts require constant care and adjustment, the mechanical engineer has the task not only of designing and installing complicated machinery, but also of operating it efficiently after it has been installed.

Among the major branches of mechanical engineering are included power production engineering, machine and machine-tool design, railway mechanical engineering, automotive engineering, aeronautical engineering, refrigerating engineering, air conditioning engineering, and the numerous mechanical problems related to modern industrial operation.

This program of study is designed to give the student considerable training in the principles of mechanical engineering and equip him for advancement in the many subdivisions of this branch of engineering. Students interested in Aeronautical work may select appropriate courses in Aerodynamics, Airplane Engines, and Airplane Design in the senior year.

FIRST YEAR					
First Semester			Second Semester		
Course No.	Course	Class Hours	Course No.	Course	Class Hours
M1	Algebra	2½	M2	Trigonometry	2½
* D1	Engineering Drawing	2½	D2	Engineering Drawing	2½
P1	Physics I	2½	P2	Physics II	2½
		7½			7½
SECOND YEAR					
M3	Analytical Geometry }	2½	M6	Integral Calculus	2½
M5	Differential Calculus }	2½	MD2	Machine Drawing	2½
* MD1	Machine Drawing	2½	ME2	Applied Mechanics	2½
ME1	Applied Mechanics	2½			
		7½			7½
THIRD YEAR					
* ME3	Strength of Materials	2½	ME4	Strength of Materials	2½
ME7	Mechanism	2½	CE4	Hydraulics	2½
* ME5	Heat Engineering	2	ME6	Heat Engineering	2
		7			7
FOURTH YEAR					
* ME9	Machine Design	2	ME10	Machine Design	2
* ME11	Mechanical Engineering Laboratory	2½	ME12	Mechanical Engineering Laboratory	2½
**	Engineering Elective	2½		Engineering Elective	2½
		7			7
FOURTH YEAR (Aeronautical Option)					
ME13	Aerodynamics	2½	ME14	Aeronautical Laboratory	2½
* ME15	Airplane Design I	2	ME16	Airplane Design II	2
* ME17	Airplane Engines I	2	ME18	Airplane Engines II	2
		6½			6½

* No credit allowed until completion of second semester.

** Among the elective subjects deemed desirable are Concrete (1), Electricity, and Airplane Design.

DEGREE OF BACHELOR OF BUSINESS ADMINISTRATION PROGRAM

THE LINCOLN TECHNICAL INSTITUTE in conjunction with the Evening School of Business, Northeastern University, offers a six-year program leading to the Degree of Bachelor of Business Administration in Engineering and Industrial Management. Graduates of the Lincoln Technical Institute holding the Degree of Associate in Engineering can complete the remainder of the program to qualify for the B.B.A. degree in two years.

DEGREE PROGRAM

		<i>Semester Hours</i>
<i>Lincoln Technical Institute:</i>		
Twelve approved full courses in chosen engineering program (any of the curricula listed on pages 26 to 32).		60
<i>School of Business:</i>		
Accounting Aids to Management	5	
Business Economics	5	
Industrial Management Problems and Policies	5	
Business and Industrial Management	5	
Principles of Production and Scientific Management	5	
Principles of Purchasing	2½	
Business Reports and Conferences	2½	30
*Business Readings		5
†Occupational Experience		30
Total Semester Hours Required for Degree		125

* There are no lectures in the Business Readings Course, which is designed to broaden the student's acquaintance with selected readings in the field of business.

† Occupational Experience is awarded to a maximum of ten semester hours for each of the last three years of the course. The award is based on the nature and quality of the student's occupation during this period.

ALPHABETICAL LIST OF SUBJECTS IN ALL CURRICULA

<i>Course No.</i>	<i>Subject</i>	<i>Semester Given</i>	<i>Day</i>	<i>Time</i>
IE5	Accounting Aids to Management I.....	1	Monday	7-9:30
IE6	Accounting Aids to Management II.....	2	Monday	7-9:30
EL1	Advanced Electrical Laboratory I.....	1	Friday	7-9:30
EL2	Advanced Electrical Laboratory II.....	2	Friday	7-9:30
IE10	Advanced Time Study.....	2	Monday	7-9:30
ME13	Aerodynamics.....	1	Monday	7-9:30
ME14	Aeronautical Laboratory.....	2	Monday	7-9:30
ME15	Airplane Design I.....	1	Wednesday	7-9
ME16	Airplane Design II.....	2	Wednesday	7-9
ME17	Airplane Engines I.....	1	Friday	7-9
ME18	Airplane Engines II.....	2	Friday	7-9
M1	Algebra.....	1, 2, S	Monday	7-9:30
EE5	Alternating Current Machinery I.....	1	Wednesday	7-9:30
EE6	Alternating Current Machinery II.....	2	Wednesday	7-9:30
EE2	Alternating Current Theory.....	2, B	Wednesday	7-9:30
M3	Analytical Geometry.....	1	Monday (2)	7-9:30
ME1	Applied Mechanics I.....	1	Friday	7-9:30
ME2	Applied Mechanics II.....	2	Friday	7-9:30
EE12	Communication Engineering I.....	2	Monday and Wednesday	7-9:30
EE13	Communication Engineering II.....	1	Monday and Friday	7-9:30
CE6	Concrete.....	1	Monday	7-9
CE7	Concrete Design.....	2	Monday	7-9
M5	Differential Calculus.....	1	Monday (2)	7-9:30
EE3	Direct Current Machinery I.....	1	Wednesday	7-9:30
EE4	Direct Current Machinery II.....	2	Wednesday	7-9:30
EE1	Direct Current Theory.....	1, 2	Wednesday	7-9
ED1	Electrical Drafting.....	1	Friday	7-9:30
	Electrical Laboratory.....	Both	Friday	7-9:30
	Electricity I.....	Both	Wednesday	7-9
	Electricity II.....	Both	Wednesday	7-9
EE7	Electricity III.....	1	Monday	7-9
EE8	Electricity IV.....	2	Monday	7-9:30
EE10	Electron Tubes and Circuits I.....	2	Wednesday and Friday	7-9:30
EE11	Electron Tubes and Circuits II.....	1	Monday	7-9:30
ED2	Electronic Drafting.....	2	Friday	7-9:30
EE17	Electronic Test Equipment and Measurement I.....	1	Wednesday	7-9:30
EE18	Electronic Test Equipment and Measurement II.....	2	Wednesday	7-9:30
D1	Engineering Drawing I.....	1, 2, S	Wednesday	7-9:30
D2	Engineering Drawing II.....	2, B, S	Wednesday	7-9:30
CE5	Engineering Structures I.....	1	Friday	7-9:30
CE6	Engineering Structures II.....	2	Friday	7-9:30
EE14	Frequency Modulation and Television....	2	Monday and Friday	7-9:30
Ch1	General Chemistry I.....	1	Wednesday	7-9:30
Ch2	General Chemistry II.....	2	Wednesday	7-9:30
ChL1	General Chemistry Laboratory I.....	1	Friday	7-10
ChL2	General Chemistry Laboratory II.....	2	Friday	7-10
ME5	Heat Engineering I.....	1	Wednesday	7-9
ME6	Heat Engineering II.....	2	Wednesday	7-9
CE3	Highway Engineering.....	1	Friday	7-9
CE4	Hydraulics.....	2	Friday	7-9:30
EE15	Industrial Electronics I.....	1	Wednesday	7-9:30
EE16	Industrial Electronics II.....	2	Wednesday	7-9:30

<i>Course No.</i>	<i>Subject</i>	<i>Semester Given</i>	<i>Day</i>	<i>Time</i>
IE8	Industrial Safety Engineering	2	Monday	7-9:30
M6	Integral Calculus	2	Monday	7-9:30
EE9	Introduction to Electron Tubes	1	Friday	7-9:30
IE1	Job Analysis and Evaluation	1	Wednesday	7-9
IE7	Labor Management Relations	1	Monday	7-9
ME9	Machine Design I	1	Friday	7-9
ME10	Machine Design II	2	Friday	7-9
MD1	Machine Drawing I	1	Wednesday	7-9:30
MD2	Machine Drawing II	2	Wednesday	7-9:30
ME11	Mechanical Engineering Laboratory I	1	Monday	7-9:30
ME12	Mechanical Engineering Laboratory II . . .	2	Monday	7-9:30
ME7	Mechanism	1	Friday	7-9:30
IE2	Methods Engineering	2	Wednesday	7-9:30
Ch5	Organic Chemistry I	1	Monday	7-9:30
Ch6	Organic Chemistry II	2	Monday	7-9:30
ChL5	Organic Chemistry Laboratory I	1	Friday	7-10
ChL6	Organic Chemistry Laboratory II	2	Friday	7-10
P1	Physics I	1, S	Friday	7-9:30
P2	Physics II	2, S	Friday	7-9:30
P4	Physics III	2, S	Friday	7-9:30
IE3	Production Planning and Control	1	Friday	7-9:30
Ch3	Qualitative Chemistry	1	Monday	7-9:30
ChL3	Qualitative Chemistry Laboratory	1	Wednesday	7-10
IE9	Quality Control by Statistical Methods . . .	1	Monday	7-9:30
Ch4	Quantitative Chemistry	2	Monday	7-9:30
ChL4	Quantitative Chemistry Laboratory	2	Wednesday	7-10
ME3	Strength of Material I	1	Monday	7-9:30
ME4	Strength of Material II	2	Monday	7-9:30
CE9	Structural Design I	1	Wednesday	7-9:30
CE10	Structural Design II	2	Wednesday	7-9:30
CD1	Structural Drawing I	1	Wednesday	7-9:30
CD2	Structural Drawing II	2	Wednesday	7-9:30
	Sub-Freshman Mathematics	Both	Monday and Friday	7-10
CE1	Surveying I	1	Wednesday	7-9:30
CE2	Surveying II	2	Wednesday	7-9:30
IE4	Time Study	2	Friday	7-9
M2	Trigonometry	2, B, S	Monday	7-9:30

(1) 1 = First Semester; 2 = Second Semester; B = Repeated for Division B about March 15; S = Summer Term.

(2) Analytical Geometry and Differential Calculus are given as one course.

ENGINEERING LABORATORY EQUIPMENT

CIVIL ENGINEERING LABORATORIES

A considerable amount of demonstration equipment including many models is available for use in the study of structures, hydraulics, sanitary engineering, highways, concrete and soil mechanics.

Surveying

The Department of Civil Engineering is provided with a variety of excellent and up-to-date equipment for field work. The instruments have been chosen to make possible the working out of advanced as well as elementary field problems, and to acquaint the students with the principal makes and types of instruments in general use.

Hydraulics and Sanitary Engineering

This laboratory, located on the first floor of the South Building, is equipped with demonstration measuring devices for use in connection with the courses in hydraulics.

Complete equipment is also provided for studies of water softening, filtration, coagulation, analysis of water and sewage by the photometer, and analysis of bacterial condition of water and sewage. Also specialized equipment for advanced courses in sanitary research.

Concrete and Highway Engineering

Located on the second floor of the South Building, this laboratory is equipped for conducting all the routine tests on cement and aggregate. The 300,000 lb. Riehle testing machine in the Mechanical Engineering Department is available for compression tests on concrete cylinders.

Equipment is also available for conducting a major portion of the accepted tests on bituminous materials as used in highway work. Soil Mechanics equipment consists of a general soil sampler, consolidometer, wet-mechanical gram-size analysis and a quicksand demonstration tank.

Aerial Photogrammetry

The apparatus in this laboratory may be used to instruct the students in the basic principles of photogrammetry, or may be used

to instruct the students in the more technical phases of photogrammetry such as horizontal control, vertical control, stereoscopic plotting, mechanical triangulation, and the tri-metrogon method of plotting.

CHEMICAL LABORATORIES

For experiments and investigations in Chemistry there are available two laboratories with the following equipment:

Analytical Chemistry

The laboratory for Analytical Chemistry is fully equipped for giving instruction in the usual undergraduate courses. Each student is supplied with the necessary Pyrex and Kimble laboratory glassware, Stillmanite and Coors porcelain, and the standard pieces of hardware. Special equipment of all needed types is available.

An adjoining balance room is equipped with Becker and Voland balances suitable for quantitative analytical work.

Industrial Chemistry

This laboratory is equipped with high pressure steam, vacuum, and the facilities usually found in a chemical laboratory. The various instruments and other chemical equipment necessary for the examination, testing, and analysis of the raw materials, intermediate and final products of the various industries are at hand.

The electrical equipment includes a Kimley electro-analysis machine for the determination of copper, lead, nickel, and zinc; a Hevi-duty electric furnace for use in ignition and combustion work; and a Freas drying oven capable of adjustment for various temperatures. Power is available in a variety of D.C. and A.C. voltages.

Inorganic Chemistry

In the locker assigned to each student for his individual use are the articles needed more or less continually by him as he does his experiments in the laboratory sessions. He has a liberal supply of glass, porcelain, metal and other articles. Additional pieces of apparatus are issued from the stockroom or otherwise made available for use in particular experiments where they are needed.

The laboratories are equipped with general facilities appropriate to this course, such as gas, electricity, cold and hot water, fume hoods.

Organic Chemistry

The needed equipment is available. There are individual lockers and apparatus, fume hoods for general use, and special equipment, as required.

Drying operations are carried out with the aid of a steam-heated drying chamber, and electrically heated drying oven. Steam lines on the benches supply the steam for steam distillations, eliminating the necessity of individual steam generators.

ELECTRICAL ENGINEERING LABORATORIES

The Electrical Engineering laboratories are located in the South Building. Four laboratories are included in this unit: Dynamo, Measurements, High Tension, and Electronics and Communications.

Dynamo

This laboratory is provided with both 60 cycle three-phase 230 volt alternating current and 115-230 volt three-wire direct current. The equipment includes more than sixty motors and generators of different types together with the necessary auxiliary equipment to operate and test them. The motors and generators have been selected so as to reduce as much as possible the risk from high voltage while making available to the students a representative range of commercial apparatus.

Electrical Measurements

The equipment here is of two distinct types: first, that planned primarily for teaching principles of measurement, and secondly that which is used in teaching advanced standardizing methods as well as for calibrating instruments in other laboratories of the University. Briefly, this laboratory is equipped for practically any work in electrical measurements except for the absolute determinations carried on in national standardizing laboratories.

High Tension

This laboratory is equipped with the necessary transformers and auxiliary equipment to provide 4 Kva. at 50,000 volts potential. A special room has been equipped for cable and insulation testing, and impulse testing of insulation is made possible by a surge generator capable of producing waves having crest values up to 300,000

volts. A 4,000 ampere low voltage transformer is also available for the study of the effects of heavy currents in conductors, switches, and contacts.

ELECTRONIC ENGINEERING LABORATORIES

The Electronics laboratories are located in Richards Hall and the South Building.

Electron Tubes and Circuits

Equipment is available to study the operating of all types of electron tubes that are normally used, extending from diodes through to beam tubes, gas triodes, photocells, cathode ray tubes, and the various rectifier, amplifier and other basic circuits used with them, including vacuum tube voltmeters, regulated power supplies, resistance coupled amplifiers, inverse feedback amplifiers, etc.

Electronics and Communications

These laboratories are equipped with modern apparatus for work in the fields of electronics, networks, radio engineering, ultra-high frequency techniques and industrial electronics. The equipment includes Westinghouse Ignitron Rectifier, Industrial X-Ray Equipment, Motor Control Unit and equipment on Induction and Dielectric Heating.

Industrial Electronics

Equipment available for this course includes: photocell and time delay relays, motor controls, cathode ray oscilloscopes, grid controlled rectifiers, oscillators, induction and dielectric heating equipment, and welding control equipment.

Communication Engineering

Equipment available for this course includes crystal oscillators, radio frequency amplifiers, frequency doublers, plate and grid modulation units, complete transmitters, radio frequency transmission lines. The frequency modulation apparatus includes balanced modulators, reactance modulators, phase modulators, discriminators, limiters, networks, antenna units, and complete receivers.

Apparatus for television includes sweep oscillators and amplifiers, synchronizing circuits, video amplifiers, multivibrators, counters, clipping, shaping and D.C. insertion circuits, and television receiving equipment.

In the newer fields such as Industrial Electronics and Television equipment is added from time to time as practical experiments are developed.

INDUSTRIAL ENGINEERING LABORATORY

The Industrial Engineering Laboratory is located in Richards Hall and is devoted exclusively to methods engineering and time study analysis. This laboratory is completely equipped with the latest facilities and tools used by industrial engineers. Besides the general equipment consisting of benches, tables, lathes, jigs, fixtures, and racks, the laboratory has an ample supply of time study boards, stop watches and timers for time study work. There is also available complete motion picture equipment and microchronometers for micromotion work.

Students in the Department of Industrial Engineering also share in the use of the Mechanical Engineering Laboratories.

MECHANICAL ENGINEERING LABORATORIES

The Mechanical Engineering Department has a suite of well-equipped laboratories, containing a large variety of modern machines and occupying over 10,000 square feet of floor space in the basement of Richards Hall. Special areas have been set aside and equipped for oil testing, mechanics research, and similar purposes. Auxiliary equipment is, of course, available for making all the usual tests and measurements.

Steam Power

This equipment includes a wide variety of steam engines, turbines, pumps, heat exchangers, and measuring instruments.

Testing Materials and Heat Treatment

For tension, compression, bending, and shearing tests, the laboratory is equipped with a 300,000 lb. capacity Riehle and a 50,000 lb. capacity Olsen, as well as several smaller testing machines. For other tests the laboratory has cement testers, torsional testing machines, impact testers, fatigue testers, hardness testers, extensometers, oil testing equipment calorimeters, as well as instruments for measuring speed vibration, temperatures, pressures and flow of fluids.

For heat treatment studies, an electric furnace and a gas-fired furnace are available. Equipment magnifying up to 2600 diameters is available for photographing crystalline structures, and the laboratory has polaroid equipment for photoelastic stress analysis.

Machine Shop

Adjoining the laboratory is a machine shop fully equipped with machine tools, welding equipment, and a small forge.

Internal Combustion and Aeronautics

The internal combustion equipment includes a number of gas and oil, automobile, airplane, and Diesel engines. Most of these are set up for running experimental tests, but several are available for dismantling and demonstration purposes.

An open circuit Venturi type wind tunnel having a three-foot throat and capable of 120 miles per hour wind velocity is available for experimental and demonstration work in the measurement of air forces on model planes and other structures. The tunnel is equipped with three component hydraulic balances having variable degrees of sensitivity.

DESIGN AND DRAFTING ROOMS

The School possesses large, light, and well-equipped drawing rooms for the carrying on of the designing and drafting which form so important a part of engineering work. These rooms are supplied with lockers containing the drawing supplies, and files containing blueprints, and photographs of machines and structures that represent the best practice. Drafting room blackboards are equipped with traveling straightedge devices which facilitate speed and accuracy in blackboard demonstrations.

PHYSICS DEPARTMENT

The Physics equipment has been carefully selected and is ample for demonstrating physical principles. The following apparatus is available for this purpose:

Motor driven Hyvac pump, mechanical oscillator, elasticity apparatus; Joly balance; barometers; pulleys; specific gravity bottles; torsion balance; eight-foot slide rule; wave apparatus; spherometers; organ pipes; tuning forks; Hartl optical disk; arc illuminator; projection lantern; refraction apparatus; metronome;

lenses; calorimeters; hydrometers; thermometers; burners; apparatus for measuring latent heat, specific heat, expansion and mechanical equivalent of heat; optical bench and supplies; diffraction grating; spectroscopes; rheostats; galvanometers; magnets; electrostatic apparatus; electroscope; Wimshurst machine; induction coil; ammeters; voltmeters; resistance boxes; condensers; wheatstone bridges; thermocouples; demonstration table equipped with water, compressed air, exhaust hood, 110 volts D.C., 110 volts A.C., and 220 volts A.C.

DESCRIPTION OF COURSES

THE LINCOLN TECHNICAL INSTITUTE reserves the right to withdraw, modify, or add to the courses offered or to change the order or content of courses in any curriculum.

The Lincoln Technical Institute further reserves the right to change the requirements for graduation, tuition and fees charged, and other regulations. However, no change in tuition and fees at any time shall become effective until the school year following that in which it is announced.

Any changes which may be made from time to time pursuant to the above policy shall be applicable to all students in the school, college, or department concerned, including former students who may re-enroll.

CHEMISTRY

Ch 1-2 General Chemistry

This course will instruct in the fundamental ideas of matter and energy; properties of gases, liquids, and solids; molecular weights; equations and valence; classification of the elements; ionic reactions; chemistry of metals and non-metals; electrochemistry; introduction to organic chemistry including industrial applications to petroleum, rubber, synthetic resins, plastics; chemotherapy; laboratory experiments demonstrating the principles discussed in class.

2½ semester hours credit

ChL 1-2 General Chemistry Laboratory

This course consists of a series of laboratory experiments operated in conformance with the lecture course in General Chemistry (Ch 1-2).

3 semester hours credit

Ch 3 Qualitative Chemistry

The object of this course is to give the student knowledge of the various fundamental laws and principles. A portion of the time is devoted to the formulation of numerical terms which are essential to the understanding of the mass action law, ionic equilibria, solubility product, hydrolysis, and redox instants. The use of the newer spot tests is stressed and, where possible, their reactions explained.

2½ semester hours credit

ChL-3 Qualitative Analysis Laboratory

This course applies the material covered in Ch-3 to actual problems. After some preliminary experiments, certain procedures are combined and the separations and identifications made on both known and unknown solutions. Finally, these are combined into a complete, systematic scheme

which is applied to artificially prepared mixtures and industrial materials. Careful manipulations, thoroughness in observation, and accuracy in arriving at conclusions are expected of each student.

3 semester hours credit

Ch 4 Quantitative Chemistry

It is the purpose of this course to give to the student a realization of the scientific development of quantitative methods. Each of the major operations such as weighing, measurement of volumes, titration, filtration, ignition, and combustion, is considered from the standpoint of the theoretical principles involved, and with due consideration of the manipulative technique necessary.

This is followed by the combination of these operations and their application to actual analysis, including a comprehensive study of volumetric methods and of the more elementary parts of gravimetric analysis.

As the correct calculation of analytical results is of no less importance than the actual procedures of analysis, a number of problems forms a very important part of the course.

2½ semester hours credit

ChL-4 Quantitative Analysis Laboratory

This is a laboratory course intended to illustrate by actual use the various analytical methods considered in Ch 4. After certain preliminary experiments designed to acquaint the student with the apparatus used, volumetric analysis, including acidimetry and alkalimetry, oxidation, reduction, and precipitation methods are taken up. This is followed by simple gravimetric analysis.

3 semester hours credit

Ch 5 Organic Chemistry

A study of the basic principles of the aliphatic organic compounds including hydrocarbons and isomerism, petroleum, alcohols, carboxylic acids, halogen compounds, and stereochemistry. The resemblances of classes is stressed, and emphasis is placed on genetic charts. The industrial significance of the subject is discussed to show the practical nature of organic chemistry.

2½ semester hours credit

ChL-5 Organic Chemistry Laboratory

Preparations and reactions of the aliphatic compounds.

3 semester hours credit

Ch 6 Organic Chemistry

A continuation of Ch 5 dealing with the preparation and characteristic reactions of the aromatic organic compounds. Special attention is given to polymerization, diazotization, aromatic hydrocarbons, benzene, substitution in the benzene ring, phenols, aromatic acids, dyes, rubber, synthetic resins and plastics. A few of the more important heterocyclic compounds may be covered.

2½ semester hours credit

ChL-6 Organic Chemistry Laboratory

Preparations and reactions of the aromatic compounds.

3 semester hours credit

CIVIL ENGINEERING**CE1-2 Surveying**

(a) A course of lectures which treats the basic principles, such as: taping, compass, theory and use of the transit as applied to both random and closed traverses, differential leveling, profile leveling, and double-rodged leveling. The D.M.D. and rectangular co-ordinate methods (of computing, plotting and running traverses) are stressed and especially as they may apply to such work or procedure as outlined by the Massachusetts Land Court.

(b) A continuation of Surveying (a), consisting of lectures and problems on simple curves (railroad curves and circular arcs), vertical curves, compound Stadia surveying, the theory and use of the plane table, plane triangulation curves, and elementary earthwork problems.

(Prerequisite, M 1-2)

5 semester hours credit

CE3 Highway Engineering

An outline of the principles governing the finance of highway projects. Thorough discussion of the survey for a highway project. Lectures on the fundamental principles of highway design. Various present-day road surfaces are discussed. A study of the fundamental principles of soil mechanics as it relates to Highway design.

2 semester hours credit

CE4 Hydraulics

This course is a study of the principles of both hydrostatics and hydrodynamics. The subjects considered are: the pressure on submerged areas together with their points of application; the laws governing the flow of fluids through orifices, short tubes, nozzles, weirs, pipe lines, and open channels; Reynolds numbers; and viscosity.

(Prerequisite, ME 1-2)

2½ semester hours credit

CE5-6 Engineering Structures

First term in this theory course covers the equilibrium of forces and structures by analytical and graphical methods. Shear and moment diagrams are reviewed and expanded. Analytical and graphical analysis of roof trusses and mill building frames are worked out. The use of influence lines in analyzing stresses in beams, girders, and trusses is discussed as well as absolute maximum moment in beams.

The work in the second term consists of analyzing the stresses in various types of railroad and highway bridge trusses by means of move-up load method and equivalent uniform loadings. Counters and lateral forces on the trusses are discussed. Deflections of beams and trusses by method of work (dummy load) and moment-area method are studied. The course closes with an introduction to the slope and deflection method as well as moment distribution method of analyzing statically indeterminate beam and portal problems.

(Prerequisite, ME 3-4)

5 semester hours credit

CE 7 Concrete

A consideration of the theoretical and practical principles involved in the design of concrete and reinforced concrete structures. The following subjects are thoroughly discussed: the manufacture of Portland Cement; the specification requirements for fine and coarse aggregates, followed by the design of a concrete mix; the design and capacity of existing single reinforced rectangular beams, double reinforced rectangular beams, and "T" beams; the fundamental principles underlying diagonal tension and bond stress; column design and methods of determining stresses in existing columns; the origin of curves and tables and their uses. Problems involving the above types of sections, first by the transformed area method and later by curves and tables, are done by the students.

(Prerequisite, ME 1-2)

2 semester hours credit

CE 8 Concrete Design

This course will consist of the design of a cantilever retaining wall, retaining wall with counterforts, a typical bay of a reinforced concrete building, footing design, and a reinforced concrete bridge. The course will also include a detail discussion of the Hardy Cross method of moment distribution, column analogy, and a comparative discussion of stress analysis in rigid frames.

(Prerequisite, CE 7)

2 semester hours credit

CE 9-10 Structural Design

This course consists of a study of the design of such structural units as steel beams, girders, columns, trusses, riveted connection and steel frames as a whole. Particular attention is given to the practical phases of construction and their relation to design. The design of structural timber is also studied. In the first half of the year the student is given many problems which he works out at home and in class and the last half of the year is usually devoted to the design and detailing of some larger, more complicated structures or portions of structures.

Students with a previous record of study in Structural Design may be admitted to this course for work of an advanced nature. Individual problems may be assigned, such as the design of a highway or railroad, a bridge, a roof truss or a portion of an office building.

(Prerequisite, CD 1-2 and ME 3-4)

5 semester hours credit

CD 1-2 Structural Drawing

The course in Structural Drawing consists of making shop drawings of the various members of modern steel frames. After making drawings of structural sections and standard connections, the student is given data from which he makes framing plans and shop details. The problems usually covered are: portions of a steel frame building, a bridge girder, and a roof truss.

(Prerequisite, D 1-2)

5 semester hours credit

ELECTRICAL ENGINEERING**EE-1 Direct Current Theory**

This course is designed to give the student the required understanding of direct current fundamental circuits. The course deals with such concepts as: emf., current, resistance, conductance, circular mil, Ohm's Law, series and parallel D.C. circuits, D.C. power and energy, primary and secondary cells, Kirchoff's Laws, instruments, magnetic circuits and electrostatics.

2 semester hours credit

EE-2 Alternating Current Theory

This course consists of lectures and problems dealing with elementary A.C. circuit theory involving sinusoidal currents and emfs, effective value, power and energy, power factor, complex and polar notations, series and parallel circuits, resonant conditions, elementary polyphase circuits.

2½ semester hours credit

EE-3-4 Direct Current Machinery I and II

(Lecture and laboratory.) This course consists of the D.C. shunt, series and compound motor and generator. Emphasis is placed upon commutation, armature reaction, losses, efficiencies, stray power, ratings, methods of test as well as on auxiliary equipment such as protective devices. The application of D.C. machinery in industry is also involved.

(Prerequisite, EE-1)

5 semester hours credit

EE-5-6 Alternating Current Machinery I and II

(Lecture and laboratory.) This course involves more advanced alternating current theory as applied to transformers, induction motors, synchronous motors and alternators. Methods of construction, characteristics, operation and methods of testing are emphasized.

The accompanying laboratory includes some of the more difficult D.C. machinery experiments, as well as those dealing with A.C. circuits and transformers.

(Prerequisite, EE-2)

5 semester hours credit

EE-7 Electricity III

A course of lectures and problems dealing with the transmission and distribution of electric power by means of direct and alternating current. A complete study of the application of the various types of electrical machinery to industry.

(Prerequisite, EE 5-6)

2 semester hours credit

EE-8 Electricity IV

A continuation of Electricity III consisting of lectures and problems covering the principles, characteristics, and applications of electronic tubes to industrial and commercial processes. This course is co-ordinated with appropriate laboratory work.

2 semester hours credit

EL-1-2 Advanced Electricity Laboratory I and II

This course includes tests on many different types of alternating current motors, generators, transformers, and rectifiers. Reports are written on the tests performed as in the previous course in Electrical Laboratory. The apparatus available for testing is sufficiently diverse so that experiments can be selected to fit the interests and need of individual students.

Typical experiments include the following: Load Test on Synchronous Generator; Determination of the Voltage Regulation of an Alternator by the American Standards Association Method; Tests on several different types of Induction Motors; Determination of the V-curves and Efficiency of a Synchronous Motor; Parallel operation of Alternators 3-phase transformer circuits.

(Prerequisite, EE 5-6)

5 semester hours credit

ELECTRONIC ENGINEERING**EE-9 Introduction to Electron Tubes**

The object of this course is to acquaint the student with the various types of electron tubes that will be used in the later courses on circuits and applications. It begins with a review of electron theory, then the theory of electron emission, by thermionic, photo-electric, secondary and field means, including the study of the construction and processing of the various types of cathodes. The construction and evacuation of tubes will be discussed. Then the diode tube with the space charge phenomena will be taken up leading into the control of electrons in vacuum tubes. The static and dynamic characteristics of the various tube types will be covered. Equivalent amplifier circuits will be discussed in preparation for a more complete study of them in Electron Tube Circuits. Rectifier action will be covered and the addition of gas in vacuum tubes and the control of discharges in gas filled tubes.

The laboratory work comprises a group of experiments to parallel the theory given in the lecture course. These experiments cover electron emission, plate resistance of diodes, both gas and vacuum, static and dynamic characteristics of triodes, tetrodes, pentodes and beam tubes.

(Prerequisite, EE 1-2)

2½ semester hours credit

EE-10 Electron Tubes and Circuits I

This course is designed to follow Introduction to Electron Tubes. The first part of the course deals with a study of thyatrons, photocells, cathode ray tubes, ignitrons, multi-purpose and special tubes.

After completing the study of tubes, the basic circuits will be investigated beginning with rectifier circuits, both single and three phase, including filters that form a part of most complete rectifiers. Then the amplifier circuit will be covered for direct current, audio and radio frequency, voltage and power amplifiers, with the various modes of operation with respect to electrode voltages and signal voltages, known as Class A, AB, B, and C operations. Push-pull and inverse feedback circuits will be included.

The experiments in the laboratory will cover almost every type of tube and circuit that is studied in theory. These include thyratrons, photocell, cathode ray tubes, rectifier, R-C amplifier, power and feedback amplifier, and radio frequency amplifier circuits.

(Prerequisite, EE-9)

5 semester hours credit

EE-11 Electron Tubes and Circuits II

The material in this course begins where the Part I has stopped and the first subject is the study of oscillators, including feedback, relaxation, electro-mechanical, and several others.

This will be followed by modulators, demodulators, pulse generating, shaping, clipping, differentiating, integrating and trigger circuits will also be covered. Much of this last group will be used in the study of Television later in the course.

The laboratory experiments include audio and radio frequency oscillators, crystal and relaxation oscillators, magnetostriction oscillators, plate and grid modulators, balanced modulators, various types of demodulators, pulse generating, shaping, square wave, clipping differentiating, integrating and trigger circuits. Laboratory reports are written on all of these experiments.

(Prerequisite, EE-10)

2½ semester hours credit

EE-12 Communication Engineering I

This course is designed to give the student a thorough knowledge of radio receiver operation and practice. After briefly covering the early types of radio receivers such as the regenerative and radio frequency circuits the super-heterodyne will be covered, both for broadcast and communications use. Particular attention will be paid to pre-selectors, mixers and converters, intermediate frequency amplifiers, automatic volume control, and loud speakers. Audio amplifier and rectifier circuits will be reviewed as to use in receivers, as they will have been covered in a previous course. Attention will be given to problems of selectivity, sensitivity, stability and fidelity of receivers.

In the laboratory, experiments will be conducted on all of the above subjects including the use of an RCA dynamic demonstrator which allows the student to see a typical super-heterodyne circuit in large detail in operating condition with test points to attach meters or an oscilloscope.

(Prerequisite, EE 10-11)

5 semester hours credit

EE-13 Communication Engineering II

In this course the requirements for broadcast transmitters and associated equipment will be covered and then the types of circuits and adjustment of these circuits to fulfill these requirements. This material will include studios, microphones, transcription equipment, audio amplifying equipment, telephone lines for broadcasting, including their equalization. Then on to the transmitter, starting with the crystal oscillator, buffer, amplifier power amplifiers, modulators, transmission lines and the antenna, including directional antennas.

(Prerequisite, EE-12)

5 semester hours credit

EE-14 Frequency Modulation and Television

Principles and advantages of frequency modulation will be covered first, then the various methods of obtaining it in the transmitter and the special circuits found in the receiver. Ultra-high-frequency transmission characteristics will also be covered in this course. Experiments in frequency modulation will parallel most of the lectures.

The basic principles of various methods of picture transmission such as wire photo, radio photo, facsimile and then television. Review of the mechanical methods used in early television. Electronic television systems, using the iconoscope and image dissector for transmission, and cathode ray tube for reception. Synchronizing circuits and problems. Video amplifiers, deflecting circuits, television transmitters, receivers and antennas. Problems and technique of transmission of motion pictures and outdoor and studio scenes.

5 semester hours credit

EE-15 Industrial Electronics I

In this course the use of electron tubes in industrial applications will be studied. Subjects include photocell relays, time delay relays, grid controlled rectifiers, and motor control circuits.

The laboratory experiments cover almost every subject covered in the theory part of the course: photocell and time delay relays, grid controlled rectifiers and inverters, and motor control circuits. Laboratory reports are required for each experiment.

(Prerequisite, EE 10-11)

2½ semester hours credit

EE-16 Industrial Electronics II

This course consists of studies of welding control circuits, induction, dielectric heating circuits and applications, and cathode ray oscilloscope in industrial applications.

The laboratory experiments cover welding controls, induction and dielectric heating applications, and cathode ray oscilloscopes. Laboratory reports are required for each experiment.

(Prerequisite, EE-15)

2½ semester hours credit

***EE-17-18 Electronic Test Equipment and Measurements I and II**

This course is designed for those who may wish to specialize in the fourth year, and instead of covering both the Industrial Electronic and Communication, Frequency Modulation and Television field will want to concentrate on one group or the other.

The subject material will be useful in either the field of Industrial Electronics or Communications. The course content includes review of D.C. and A.C. meters; measurement of R, L, and C; vacuum tube measurements; vacuum tube voltmeters; impedance at audio frequencies; impedance at radio frequencies; measurements of audio frequencies; measurement of radio frequencies; use of signal generators and audio oscillators in alignment and curves; cathode ray oscilloscopes; wave analyzer; and square wave testing.

**Fourth Year Elective. This course may be substituted for EE-15-16.*

Laboratory experiments cover all of the above subjects and reports are made up of each experiment.

5 semester hours credit

INDUSTRIAL ENGINEERING

IE 1 Job Analysis and Evaluation

Basic principles underlying theory of wage calculation, job elements and their definitions, rating scales, writing job descriptions and specifications, selection of appropriate rating plan, setting up job factors and maximum point values, use of several methods of determining specific point values. Discussion of special cases from individual companies.

IE 2 Methods Engineering

Process and operation analysis through the use of process charts, flow diagrams, operation charts, man-and-machine charts, micromotion study, principles of motion economy. Work place layout, labor-saving tools and equipment, laboratory development work. Elementary time study. Setting up synthetic standards using elemental time values. Wage incentives, problems involved in the introduction of work simplification with particular emphasis upon employee morale.

IE 3 Production Planning and Control

Factory organization, factory planning and layout, materials handling, storage, maintenance, power. Forecasting and budgeting, planning, scheduling, routing, dispatching, subcontracting. Quantity control, quality control, waste control, priorities, allocations, inventory control, records and reports.

IE 4 Time Study

Introduction to wage incentives and current wage plans. History and development of time study, relation to motion and micromotion study, preliminary observation, technique of making time studies. Rating procedure, development of proper concept of "normal" performance, applying the rating and relaxation factors. Setting job and element standards, use of allowances, treatment of variables, introduction to standard data, synthetic standards, problems in the application of standards. Laboratory practice will supplement the classroom work.

IE 5-6 Accounting Aids to Management

A study of the broad background of accounting and business transactions so as to enable the student to analyze and interpret intelligently financial statements and other accounting reports. The course demonstrates the use of accounting in management and financial control. Emphasis is placed on the development of accounting fundamentals, preparation of financial statements, corporation and manufacturing accounts, evaluation of balance sheet items, analysis and interpretation of financial statements and other trends, and the use of accounting as an aid to management.

IE 7 Labor-Management Relations

The industrial relations policy and legislation affecting industrial relations, labor-management committees, collective bargaining in theory and practice, grievance procedures, settling labor disputes, negotiating labor contracts, problems of interpretation, renegotiating of contracts, responsibilities of employers and employees in terms of employment, investment and the public.

IE 8 Industrial Safety Engineering

Organization of safety department, economic advantages, plant layout, job analysis, machine safeguarding, hand tools, materials handling, prevention of falls, industrial health hazards, fire prevention and protection, plant housekeeping, investigations and reports, first aid, administering safety program, training the worker, off-job accidents.

IE 9 Quality Control by Statistical Methods

Fundamentals of quality control. Theory of control charts. Analysis of control chart data. Sampling methods. Control chart applications. The poisson distribution. Planning for statistical quality control. Reports on quality control installations. Acceptance sampling. Control chart techniques and industrial applications.

IE 10 Advanced Time Study

Review of stop-watch time study. Use of special timing devices and their relative accuracy; use of motion pictures for rate-setting and training purposes. Current trends in wage payment policy and in the use of time study data. Problems involved in setting up standard data for a variety of operations. Development of tables, families-of-curves, formulae, nomographs, and multi-variable charts for synthetic rate-setting purposes.

The laboratory part of the course will involve the complete analysis and time study of a selected operation performed upon a series of products within a definable variable range, and the building of standard data from the time studies made by the students. Operations submitted by individual students may be used for this purpose.

MECHANICAL ENGINEERING**ME 1 Applied Mechanics (Statics)**

The subjects treated are collinear, parallel, concurrent, and non-concurrent force systems in a plane and in space; the determination of the resultant of such systems by both algebraic and graphical means, special emphasis being placed on the string polygon method for coplanar force systems; the forces required to produce equilibrium in such systems; first moments; and problems involving static friction, such as the inclined plane and the wedge.

(Prerequisite, P 1)

2½ semester hours credits

ME 2 Applied Mechanics (Kinetics)

The subjects treated are continuation of first moments as applied to varying intensity of force and to the determination of center of gravities of areas and solids; second moments and the application to the determination of moment of inertia of plane and solid figures, radius of gyration, polar moment of inertia; product of inertia principal axes, uniform motion, uniformly accelerated motion, variable accelerated motion, harmonic motion, simple pendulum, rotation, plane motion, work, energy, momentum and impact.

(Prerequisite, ME 1)

2½ semester hours credit

ME 3-4 Strength of Materials

This course comprises the study of the stresses and strains in bodies subjected to tension, compression, and shearing; common theory of beams with thorough description of the distribution of stresses, shearing forces, and bending moments; deflection of beams.

A study is made of the strength of shafting and springs; combined stresses in beams subjected to tension, compression, and bending; also strength of riveted joints, columns, and thin hollow cylinders, and brief consideration of strains and the relation of the stresses on different planes in a body.

(Prerequisite, ME 1-2)

5 semester hours credit

ME 5-6 Heat Engineering

The fundamentals of thermodynamics are discussed in this course and include the general theory of heat and matter; first and second laws of thermodynamics; equations of state; fundamental equations of thermodynamics; laws of perfect gases; properties of vapors including use of tables and charts; and the general equation for the flow of fluids. Particular emphasis is given to the properties of steam, the use of the steam tables, and the Mollier diagram.

The course also embraces a study of fuels and combustion of fuels as applied to steam boilers.

The purpose of the course is to familiarize the student with the theory of heat as applied to prime movers.

Descriptions of many different kinds of apparatus used in the steam power plant such as engines, turbines, and auxiliary equipment, including pumps, condensers, heaters, fans, etc., comprise the major part of the course. A large number of problems related to the apparatus discussed are solved. In addition to the above, such items as draft, chimneys, coal and ash handling equipment, piping and valves, and technical power plants are studied. In addition to the study of steam apparatus, air compressors and internal combustion engines are discussed.

(Prerequisite, P 1-2)

4 semester hours credit

ME 7 Mechanism (I)

The object of this course is to acquaint the student with the principles of mechanism which are met in practice and in machine design. The topics

considered are belting, pulley, and gear train calculations, both simple and epicyclic, cam design and theoretical design of gear-tooth shapes. The instant center calculations and velocity diagram plots or common linkages are studied.

(Prerequisite, MD 1-2)

2½ semester hours credit

ME 9-10 Machine Design

This course applies to machines the principles of which were presented in Course ME7. Typical problems presented for design are the triplex power pump, power shearing machine, and a twenty-ton hydraulic press.

Minimum sizes of the various parts are calculated and an assembly of the complete machine is drawn and traced. All calculations are carefully presented in notebook form.

Also, numerous miscellaneous small problems are taken up.

(Prerequisite, ME 7)

4 semester hours credit

ME 11-12 Mechanical Engineering Laboratory

This course includes a series of experiments upon various kinds of equipment used in modern power plants to demonstrate under actual conditions the principles developed in the Heat Engineering course. Additional experiments which include calibration of instruments, performance of hydraulic equipment, steam equipment as used in power plants, heating units for the household, air conditioning apparatus, internal combustion engines, and testing materials are performed. A complete report of each experiment is made.

(Prerequisite, ME 5-6)

5 semester hours credit

ME 13 Aerodynamics

Among the topics covered in this course are: the flow of an ideal fluid, development of the wing theory, properties of airfoils, engine and propeller characteristics, performance calculations, and stability.

2½ semester hours credit

ME 14 Aeronautical Laboratory

Laboratory exercises, such as the determination of airfoil characteristics, the effect of auxiliary lifting devices, lift, drag, and moment coefficients, and wind-tunnel calibration are carried on. Use is made of the smoke-tunnel to study air flow about various aircraft shapes. Allied tests are made on such equipment as gauges, fluid flow meters of all types, air blowers and pumps.

Experiments are carried on in the internal combustion laboratory where various engines are tested and experiments dealing with fuels and lubricating oils are made.

Detailed reports are required of each experiment.

2½ semester hours credit

ME 15-16 Airplane Design

The object of this course is to acquaint the student with the methods of practical airplane design as prescribed by the Civil Aeronautics Authority. The student will begin with the specifications of an airplane and complete the following phases of the design: (1) balance diagram; (2) weight estimate and balance table, (3) three view drawing, (4) estimate performance, (5) calculate stability, (6) stress analysis of the structure.

Students must have completed a course in Aerodynamics or must be taking it concurrently with this course. *2 semester hours credit*

ME 17-18 Airplane Engines

Essentially a course in internal combustion engines, it deals with an exhaustive study of engine thermodynamics, emphasis being placed on the standard-air Otto and Diesel cycles. Many problems are solved to demonstrate the importance of compression ratios, variable specific heats, volumetric efficiency, and engine performance.

Fuels and their combustion are studied and calculations of theoretical and excess air are made based on fuel compositions, products of combustion, and experimental Orsat data.

A study is made of the functions and design of the moving parts in an aircraft engine. Problems in strength of materials are solved in the design of crankshafts, connecting rods, and valve springs. The effect of high temperatures and the heat treatment of metals are discussed in regard to the proper design of cylinders and valves. Other problems dealing with engine dynamics, inertia forces and balance are considered.

Detailed studies are made of carburetion, ignition, and lubrication; in addition to auxiliary equipment. *4 semester hours credit*

DRAWING**D 1-2 Engineering Drawing**

This course is planned to meet the requirements of a class composed of students who have had no previous instruction in drafting, and also for those who may have had one or two years' work in preparatory schools.

Instruction is given in the testing, use and care of the instruments and drawing supplies, and solutions are required for problems which are presented on about thirty drawing sheets. The topics studied in these sheets include: technique practice, lettering, geometric construction, orthographic projections, auxiliary views, revolution of objects, isometric, cavalier, cabinet and perspective projection, intersections, sections, helix and application, screw threads, dimensions and inking. A number of practical problems, pertaining to the professional courses to be taken, in which drawing is the application, are also given.

These give the student a thorough training in the fundamental principles of Engineering Drawing, so that he may easily do the drafting required in his professional course. A short lecture is given at the opening of each class based on the work at hand, and individual instruction is given during the remainder of the class period.

For those who have had some experience in Mechanical Drawing, a special course is devised which will take care of individual needs and offers students more advanced work.

5 semester hours credit

ED 1 Electrical Drafting

This course will provide training in electrical drafting basic to electrical design. The instruction will include fundamentals of mechanical drawing; electrical drafting symbols; one-line circuit diagrams; two and three-line D.C. and A.C. circuit diagrams including power transformers, motors and generators and circuit breakers; current and potential transformers, voltmeter, ammeter, wattmeter and watt-hour meter connection diagrams; relay and control circuits; conduit layout, details, conduit and wire schedules.

(Prerequisite, EE 1, EE 2)

2½ semester hours credit

ED 2 Electronic Drafting

This course is designed to provide training in the preparation of manufacturing drawings (including schematics, details and assemblies) for the radio and electronics industries. Instruction includes schematic diagram using the several systems of standards; electrical parts, their function, characteristics and mountings; insulation; materials and methods; sheet metal layout, tolerances and fabrication; fastenings; mechanics; layout and design, complete details and assembly drawings.

(Prerequisite, ED 1)

2½ semester hours credit

MD 1-2 Machine Drawing

This course is taught on a problem basis with the student working out problems under the supervision of the instructor. The lectures and reading assignments correlate with the class problems. Short quizzes are given to cover the reading assignments. The principles covered include preliminary machine sketches, detailing from machines and from assembly drawings, dimensions with reference to basic size system, sectioning and the making of assembly drawings from details, and also problems in cam and gear construction.

The lectures and assigned readings take up such topics as fastenings, machine elements, methods of manufacture, jigs and fixtures, methods of reproducing drawings and those drawing techniques that are to be applied to the particular problem being done.

(Prerequisite, D 1-2)

5 semester hours credit

MATHEMATICS

Sub-Freshman Mathematics

The first part of this course is devoted to a thorough study of Algebra and Plane Geometry. It then proceeds to more advanced work embraced by the course in Engineering Mathematics as described in Course M 1 and M 2.

5 semester hours credit

M 1 Algebra

Although the primary purpose of this course is to lay a thorough groundwork for the subsequent courses in Analytical Geometry, Calculus, and Applied Mechanics, it is nevertheless a complete unit in itself, and will enable the student to handle a considerable number of the problems arising in engineering practice.

Proceeding from a rapid review of the fundamental operations of Algebra, the work continues with a thorough study of fractions, linear and quadratic equations, graphs, exponents, logarithms, binomial theorem and related topics.

Early in the course complete instruction is given in the theory of the slide rule, and considerable practice in its use.

(Prerequisite, first courses in Algebra and Plane Geometry)

2½ semester hours credit

M 2 Trigonometry

This course includes the solution of all triangles by both natural and logarithmic functions, identities, radian measure, principal values and the solution of trigonometric equations. Particular attention is given to the applications of Trigonometry to engineering practice.

(Prerequisite, M 1)

2½ semester hours credit

M 3 Analytical Geometry

In this course instruction is given by lectures and recitations in the following subjects: plotting of functions, interpolation, the straight line, the conic sections, curves represented by various equations of common occurrence in engineering, graphic solution of equations, determination of laws from the data of experiments, simplification of formulas, and alignment charts. The plotting and analysis of charts in order to determine empirical formulas is an important part of the course.

(Prerequisite, M 1-2)

with M 5, 2½ semester hours credit

M 5 Differential Calculus

The work in the course consists of differentiation of algebraic, trigonometric, exponential, and logarithmic functions, both explicit and implicit; slopes of curves, maxima and minima with applied problems; partial differentiation; derivatives of higher order; curvature; points of inflection; related rates; velocities, acceleration; expansion of functions; series. Although the subject matter deals with considerable theory, constant sight is kept of the practical application.

(Prerequisite, M 3)

with M 3, 2½ semester hours credit

M 6 Integral Calculus

This is a continuation of Calculus M 5, and deals with integration as the inverse of differentiation as well as the limit of summation. The topics covered are methods of integration; use of integral tables; definite integrals; double and triple integrals; areas in rectangular and polar co-

ordinates; center of gravity; moment of inertia; length of curves; volumes of solids; areas of surfaces of revolution; volumes by triple integration; practical problems in work, pressure, etc.

(Prerequisite, M 5)

2½ semester hours credit

PHYSICS

P 1 Physics I

A course covering the fundamental principles of mechanics, wave motion and sound. The lectures are illustrated by demonstration and motion pictures. Each lecture period is supplemented with a problem period in which the student learns the practical applications of the laws of physics. Some of the topics covered are force, energy, work, machines, concurrent forces, parallel forces, elasticity, linear and rotational motion, harmonic motion, fluids, gases, wave motion and sound.

2½ semester hours credit

P 2 Physics II

The work of this course covers the subjects of heat and electricity. Under heat is included thermometry, expansion, calorimetry, behavior of gases, humidity, mechanical equivalent, thermodynamics. Under electricity are included magnetism, electrostatics, resistance, cells, thermoelectricity, capacitance, inductance, alternating currents, simple circuits in series and parallel.

(Prerequisite, P 1)

2½ semester hours credit

P 4 Physics III

This course is open only to those taking Electrical and Electronic Engineering curricula. The course includes the fundamental principles of heat and light. The section in heat includes thermometry, expansion, calorimetry, behavior of gases, vaporization, mechanical equivalent, transfer of heat, thermodynamics. Under the subject of light are included nature and propagation, reflection, refraction, dispersion, spectra, optical instruments, interference, diffraction, and polarized light.

(Prerequisite, P 1)

2½ semester hours credit

THE LINCOLN TECHNICAL INSTITUTE

360 Huntington Avenue Boston 15, Massachusetts

To the Dean: I 19.....

I (First name) (Middle name) (Last name) hereby apply for admission to the Lincoln Technical Institute, and submit the following information:

..... (Street address) (Town) (State) (Phone) Age..... Date of Birth..... Married ☐ Single ☐

Place of Birth..... Nationality.....

Father's name.....

Address.....

Name of your employer..... Nature of your employment.....

Business address..... Business Telephone.....

I have attended, including other schools of the Northeastern University system, the following schools above grammar grade (if attendance at a university, designate school):

NAME OF SCHOOL	LOCATION — CITY, STATE	Chk. Yrs. Attended				Date Left	Date of Graduation	Degree if any
		1	2	3	4			

I wish to enroll for the following:

- ☐ Curriculum, leading to the Degree of Bachelor of Business Administration in Engineering and Management, offered by the School of Business, Northeastern University, and the Lincoln Technical Institute.
- ☐ Curriculum leading to the Degree of Associate in Engineering.
- ☐ Curriculum leading to the Diploma in Chemistry.

As part of the program checked above, I wish to elect the following major:

- | | |
|---|--|
| ☐ AERONAUTICAL ENGINEERING | ☐ ELECTRICAL ENGINEERING |
| ☐ CHEMISTRY | ☐ ELECTRONICS ENGINEERING |
| ☐ CIVIL ENGINEERING | ☐ MECHANICAL ENGINEERING |
| ☐ INDUSTRIAL ENGINEERING | ☐ STRUCTURAL ENGINEERING |
- ☐ I wish to take the Sub-Freshman program with the major checked above.

☐ I do not wish to pursue a complete curriculum but, as a special student, wish to enroll in the following courses:
.....
.....

Please answer the following questions:

Have you passed a course in First Year Algebra?	If so, give approximate year
Have you passed a course in Plane Geometry?	If so, give approximate year
Have you passed a course in Elementary Chemistry? (for Chemistry students only)	If so, give approximate year

Signature of Student

Application Accepted by

THE LINCOLN SCHOOLS

Evening Sessions
OPEN TO MEN AND WOMEN

LINCOLN TECHNICAL INSTITUTE

Degree of Associate in Engineering Programs

Courses leading to the Degree of Associate in Engineering are offered in the following major fields:

AERONAUTICAL
CIVIL
STRUCTURAL

MECHANICAL
ELECTRICAL

ELECTRONICS
CHEMISTRY
INDUSTRIAL

Degree of Bachelor of Business Administration Program

A six-year program conducted in conjunction with Northeastern University School of Business is available which leads to the Degree of B.B.A. in Engineering and Management awarded by Northeastern University.

Special Programs

For those who do not wish to take one of the regular programs, special programs consisting of one or more courses can be arranged to meet individual needs.

LINCOLN PREPARATORY SCHOOL

Fully accredited by the New England College Admissions Board, General, Classical, and Technical high school courses are available. Students may enter in September, January, and June.

*For further information write, indicating the School in which
you are interested*

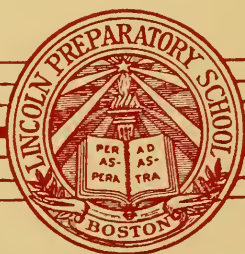
THE LINCOLN SCHOOLS

360 HUNTINGTON AVENUE, BOSTON 15, MASSACHUSETTS

Telephone, Kenmore 3177

1945-1946
EVENING SESSIONS
FORTY-EIGHTH YEAR

**LINCOLN
PREPARATORY
SCHOOL**



THE LINCOLN PREPARATORY SCHOOL

Evening high school courses are conducted on day-school standards by a competent faculty in a school accredited by the New England College Admissions Board as preparation for:

Employment in War Industry

Courses that offer fundamental training in Algebra, Geometry, Trigonometry, Physics, Drafting, Chemistry, and Biology — each of which is valuable to men and women now employed or planning to enter war industry.

The Military Services

Courses in mathematics and the basic sciences will prove extremely valuable to men who are likely to enter the armed forces.

Postwar Employment in Business and Industry

Courses that offer sound general training, basic to success in business and industry. The competition of the postwar period will require the fullest development of one's abilities. A high school education is the foundation upon which this is built and makes possible further study on the college level.

Business

Courses that offer a sound general training for those who do not plan to enter any higher institution, whereby students develop the ability, poise, and self-confidence that make for success.

Nurses' Training in Hospitals

A high school course which prepares students to enter upon a training program in accredited hospitals.

Courses which prepare graduate nurses who are not high school graduates to fit themselves for graduate study, and for teaching and administrative positions in hospitals.

Colleges

Courses preparing students for admission to colleges —

By High School Diploma

By College Entrance Board Examinations

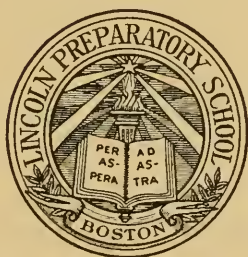
By Certification (without examination)

Professional Schools

High school courses designed to prepare students for entrance to colleges of Engineering, Business, and the pre-legal college programs preparing for entrance into Schools of Law, both day and evening.

LINCOLN PREPARATORY SCHOOL

ACCREDITED BY THE NEW ENGLAND COLLEGE ADMISSIONS BOARD



The School is situated at the entrance to the Huntington Avenue subway within nine minutes
of Park Street and easily accessible from all points

EVENING SESSIONS

Admits Men and Women

EFFECTIVE METHODS OF INSTRUCTION

Adapted for Evening Students

CALENDAR, 1945-1946

Summer Term, June, 1945-September, 1945

JUNE 4-5	Classes begin.
JULY 4	Legal holiday. No classes.
SEPTEMBER 3	Legal holiday. No classes.
SEPTEMBER 10-14	Final examinations.

School Year, September, 1945-May, 1946

SEPTEMBER 10-24	Registration period.
SEPTEMBER 24, 25	Classes begin.
OCTOBER 12	Legal holiday. No classes.
NOVEMBER 22	Thanksgiving Day. No classes.
DECEMBER 21	Last session before Christmas recess.

1946

JANUARY 2	Classes resume.
FEBRUARY 22	Legal holiday. No classes.
APRIL 19	Legal holiday. No classes.
MAY 13-17	Final examinations.

Winter Term, January, 1946-May, 1946

JANUARY 2-7	Registration period.
JANUARY 7, 8	Classes begin.
FEBRUARY 22	Legal holiday. No classes.
APRIL 19	Legal holiday. No classes.
MAY 20-24	Final examinations.

OFFICE HOURS

June 11, 1945-August 11, 1945

Wednesday, Thursday and Friday	8:45 A.M.-5:00 P.M.
Monday and Tuesday	8:45 A.M.-8:00 P.M.
Saturdays	8:45 A.M.-12:00 NOON

August 13, 1945-June 8, 1946

Monday through Friday	8:45 A.M.-9:00 P.M.
Saturdays	8:45 A.M.-12:00 NOON through September 1
	8:45 A.M.- 4:00 P.M. September 8, 15, 22, 29
	8:45 A.M.- 1:00 P.M. October 6-June 8

June 10, 1946-August 10, 1946

Wednesday, Thursday and Friday	8:45 A.M.-5:00 P.M.
Monday and Tuesday	8:45 A.M.-8:00 P.M.
Saturdays	8:45 A.M.-12:00 NOON

INTERVIEWS

Prospective students, or those desiring advice or guidance with regard to any part of the school work or curricula, are offered without obligation personal interviews with the Headmaster or his assistants. No inquirer should hesitate to ask for an appointment as, in the long run, time is saved during the school year by having the whole educational problem discussed before the opening of the School.

THE NEED FOR EDUCATIONAL PLANNING

In times of war and during periods of increased industrial activity many things have a tendency to affect one's educational program. Young men and women become attracted by high wages, which they forget are only temporary. Many young men are enlisted into the military services disrupting their educational plans.

But wars cease and we enter the postwar period where competition becomes keen. Applicants for employment who have not finished high school will be handicapped in applying for positions offering promising futures. The trained person is the best investment for the employer who must get the most for his money.

A realization of the stern facts brings one to the conclusion that education is not a "hit or miss" job but one that requires careful planning. The first step, of course, is to complete one's high school work. That should not be left undone. Such an omission half a century ago might not, probably would not, have been serious. But today it can be a calamity. On this foundation of high school work there can then be built a variety of structures: engineering training, nurses' training, business training, professional work of many kinds to which the individual may be adapted.

It is interesting to note that such work may now be done at convenient evening hours while the student pursues his regular daytime employment. Nothing stands between a prospective student and the completion of his high school work except the extent of his ambition.

Metropolitan Boston is rich in evening educational opportunities. The Lincoln Preparatory School is an accredited evening school maintaining day-school standards of performance, and enjoying for many years the confidence of the New England College Admissions Board, on whose approved list it stands. Counsellors are always available for interviews, and careful thought is given to the problem of each individual.

BOARD OF TRUSTEES

ROBERT GRAY DODGE, *Chairman*

FRANK LINCOLN RICHARDSON, *Vice-Chairman*

WILMAN EDWARD ADAMS	HENRY INGRAHAM HARRIMAN
HENRY NATHANIEL ANDREWS	CHANDLER HOVEY
ARTHUR ATWOOD BALLANTINE	MAYNARD HUTCHINSON
GEORGE LOUIS BARNES	ARTHUR STODDARD JOHNSON
FARWELL GREGG BEMIS	IRVING EDWIN MOULTROP
HENRY GODDARD BRADLEE	AUGUSTIN HAMILTON PARKER, JR.
PAUL CODMAN CABOT	FREDERICK SANFORD PRATT
GODFREY LOWELL CABOT	ROGER PRESTON
WALTER CHANNING	STUART CRAIG RAND
WILLIAM CONVERSE CHICK	JAMES LORIN RICHARDS
EVERETT AVERY CHURCHILL	HAROLD BOURS RICHMOND
PAUL FOSTER CLARK	LEVERETT SALTONSTALL
DAVID FRANK EDWARDS	FRANK PALMER SPEARE
CARL STEPHENS ELL	FRANCIS ROBERT CARNEGIE STEELE
WILLIAM PARTRIDGE ELLISON	CHARLES STETSON
JOHN WELLS FARLEY	EARL PLACE STEVENSON
ERNEST BIGELOW FREEMAN	ROBERT TREAT PAINE STORER
FRANKLIN WILE GANSE	EDWARD WATSON SUPPLE
HARVEY DOW GIBSON	JAMES VINCENT TONER

OFFICERS OF ADMINISTRATION

CARL STEPHENS ELL, A.B., M.S., Ed.M., Sc.D., *President*

EVERETT AVERY CHURCHILL, A.B., Ed.D., *Vice-President*

ALBERT ELLSWORTH EVERETT, B.C.E., M.B.A., S.B.
Director of Evening Program

JAMES WALLACE LEES, A.M., *Headmaster*

DONALD HERSHEY MACKENZIE, B.S., Ed.M., *Assistant Headmaster*

FACULTY

The faculty of the Lincoln Preparatory School has been carefully chosen from the leading high and preparatory school teachers in Boston and its vicinity. They are college trained men who have proved their ability in their various fields of specialization. They are selected on the basis of their ability to convey knowledge to others in an interesting, inspiring and effective manner. Most of these men have served with the School for many years. They have an understanding of and a sincere respect for evening school students and take a personal interest in their ambitions and success.

WALTER E. ANTUNES

Appointed 1941

B.S. Boston University, 1930; M.A. Boston University, 1932; Instructor in Biology, Long Island University, New York, 1931-33; Instructor in Science, Wakefield High School, 1936-.

Chemistry

WALTER ALFRED BALDWIN

Appointed 1910

A.B. Ohio Wesleyan University, 1906; graduate study University of Chicago and Harvard University; Head, Department of Mathematics, Chillicothe High School, Ohio, 1906-08; Head, Department of Mathematics, Mansfield High School, Ohio, 1908-10; Head, Science Department, Huntington School for Boys, Boston, 1912-14; Instructor in Physics and Chemistry, Lincoln Preparatory School, 1910-.

Chemistry

WILLIAM TILDEN BENTLEY

Appointed 1916

A.B. Harvard University, 1907; Submaster, Malden High School, 1914-24; Principal, Belmont School, 1924-29; Principal, Charles A. Daniels School, 1929-41; Principal, Glenwood School, 1942-.

History

CHARLES LEE CHEETHAM

Appointed 1928

A.B. Bates College, 1911; A.M. Columbia University, 1927; Instructor in Mathematics, Portsmouth High School, New Hampshire, 1912-14; Submaster, Westerly High School, Rhode Island, 1915-17; Instructor in Mathematics and Science, Tower Hill School, Wilmington, Delaware, 1919-23; Instructor in Mathematics and Physics, Roger Ascham School, White Plains, New York, 1923-27; Instructor in Science, Mathematics and Physics, Public Latin School, Boston, 1928-.

Physics

CARL F. CHRISTIANSON

Appointed 1933

A.B. Wesleyan University, 1923; Tilton School, New Hampshire, 1923-24; Abington High School, 1924-27; Huntington School for Boys, 1927-.

History

BLANCHE B. DALY

Appointed 1944

A.B. Hunter College, 1913; M.Sc. New York University, 1915; M.A. Radcliffe College, 1928; Ph.D. Boston University, 1933; Assistant Instructor, Hunter College, 1913-19; Instructor in Physiology, 1919-21; *Littérateur* at Carnegie Institute of Washington Nutritional Laboratory, 1934-38; Instructor, Northeastern University, 1943-.

Biology

MICHAEL D'AMELIO

Appointed 1942

A.B. Harvard College, 1922; Instructor, Brookline High School, 1922-26; Instructor, Boston Latin School, 1926-27; Instructor in Mathematics, English High School, 1927-.

Mathematics

EDMUND WINTHROP FENN

Appointed 1945

A.B. Williams College, 1928; A.M. Harvard Graduate School, 1930; Instructor, University of New Hampshire, 1935-36; Dartmouth College, 1937-38; Syracuse University, 1938-40; Northeastern University, 1945-.

History

PERCY EDWARD JONES

Appointed 1923

Sloyd Training School, 1920; B.S. Boston University, 1930; Instructor in Mathematics and Drawing, Huntington School for Boys, 1919-.

Mathematics

A. ROBERT KELMAN

Appointed 1930

B.B.A. Boston University, 1925; School of Education, Harvard University; Instructor, Quincy Senior High School, 1921-25; Instructor, Weaver High School, Hartford, Connecticut, 1925-26; Instructor, Bulkeley High School, Hartford, Connecticut, 1926-29; Head of the Department of Social Studies, The Senior High School, Watertown, 1930-.

History

ALFRED BLANCHARD KERSHAW

Appointed 1928

A.B. Amherst, 1904; A.M. Amherst, 1907; Instructor, The Allen School, West Newton, 1908-09; Instructor in English, Brockton High School, 1909-11; Master, English High School, Boston, 1911-.

English

JOHN W. MCGUCKIAN

Appointed 1944

B.Sc. Massachusetts State College, 1931; M.Ed. Boston Teachers College, 1937; Instructor, Jamaica Plain High School, 1931-42; Junior Master, Roslindale High School, 1942-.

Biology

RICHARD LAWRENCE MCGUFFIN

Appointed 1928

B.A. Boston University, 1920; M.A. Boston University, 1925; Ed.M. Harvard Graduate School of Education, 1926; Instructor in English, Lebanon Boys' School, Suk-el-Gharb, Syria, 1921-24; Directeur, Foyer De Garcons, Tunis, North Africa, 1927-28; French Master, Boston Latin School, 1929-.

French

MARSHALL NEWTON

Appointed 1940

A.B. Dartmouth College, 1925; M.A. Harvard University, 1929; Instructor, Bowdoin College, 1928-30; Instructor, Massachusetts Institute of Technology, 1931-32; Instructor, Tufts College, 1933-.

Spanish

THEODORE WOODS NOON

Appointed 1922

A.B. Yale College, 1896; M.A. Yale University, 1898; Exhibitioner, Emmanuel College, University of Cambridge, England, 1906-07; Master, Lawrenceville School, Lawrenceville, New Jersey, 1908-18; B.D. University of Chicago, 1913; S.T.M. Boston University, 1922; Ed.M. Harvard University, 1924; Instructor in Lincoln Preparatory School and Huntington School for Boys, Boston, 1922-.

Latin and Ancient History

DEANE STANFIELD PEACOCK

Appointed 1931

A.B. Bowdoin College, 1917; A.M. Bates College, 1927; Ed.M. Harvard University, 1932; Principal, Oakland High School, Maine, 1919-24; Principal, Freeport High School, Maine, 1924-31; Junior Master, English High School, Boston, 1932-.

History

OLAN A. RAND

Appointed 1943

B.A. Washington and Lee, 1926; Graduate Study, University of Vermont; Teacher, Franklin High School, New Hampshire, 1926-28; Teacher, Barre High School, Vermont, 1929-43; Instructor, The Huntington School, 1943-.

English

BARNET RUDMAN

Appointed 1942

A.B. Harvard University, 1921; Ed.M. Boston Teachers' College, 1934; Instructor in Mathematics, Rocky Grove High School, Franklin, Pennsylvania, 1921-23; Instructor in Mathematics, Pittsfield High School, 1923-28; Head of the Department of Mathematics, 1927-28; Instructor in Mathematics, South Boston High School, 1929-32; Instructor in Mathematics, English High School, 1932-.

Mathematics

ALFRED LORING SKINNER

Appointed 1927

A.B. Harvard University, 1919; Instructor in Mathematics, North Andover, Massachusetts, 1919-22; Instructor in Mathematics, Huntington School for Boys, Boston, 1922-.

Mathematics

RALPH E. WELLINGS

Appointed 1944

A.B. Boston College, 1920; A.M. Boston College, 1925; Ed.M. Boston Teachers' College, 1930; Teacher, Brighton High School, 1925-28; Teacher, Dorchester High School for Boys, 1928-44.

Mathematics

EDNA M. EDISON

Executive Secretary

MILDRED L. SPRAKER

Bookkeeper

CHARLOTTE O. ANDERSON

Stenographer

HISTORICAL STATEMENT

The Lincoln Preparatory School, affiliated with Northeastern University and known for many years as the Northeastern Preparatory School, had its real beginning in 1897 in the separate evening courses offered in History, Science, and other subjects of a cultural nature, and in certain trade courses intended to benefit men engaged in various occupations.

Gradually the trade courses were discontinued and the remaining subjects were welded into a regular high school program, upon the completion of which a standard high school diploma was awarded.

All classes in the Lincoln Preparatory School are held in the evening and are especially designed to meet the needs of those who are employed during the day.

The primary purpose of the School has been effective preparation of students for college entrance. For this reason constant attention has been paid through the years to the maintenance and improvement of standards.

In 1925 women were admitted to classes on the same basis as men. Since 1924 the School has been accredited by the New England College Entrance Certificate Board, now called the New England College Admissions Board. This is a marked distinction in the case of an evening school, and an expression of confidence that day-school standards are maintained. The School today offers curricula in the general, scientific, and classical fields. The enrollment has increased from fewer than fifty students to almost five hundred, of whom two-fifths are women. The faculty has been increased until it now numbers from twenty to twenty-five men of wide experience and training, drawn from the leading day preparatory and high schools of Metropolitan Boston.

Through the Lincoln Preparatory School many men and women have been able to solve their problems and to secure that education which has enabled them to succeed in the work for which they are adapted by ability and interest. Without these facilities many of these alumni would still be occupying minor positions with little opportunity for advancement on account of lack of training.

THE LINCOLN PREPARATORY SCHOOL

Characteristics of the School

Before a prospective student makes a final decision regarding the evening school he wishes to enter, he should ascertain some of the characteristics of a good preparatory school. Following are the outstanding characteristics of the Lincoln Preparatory School:

1. It is non-proprietary, and organized exclusively for service to students, the income being devoted to that end rather than being organized for profit.
2. Adequate fees are charged to insure the employment of the best teachers attainable and to provide constant improvement in the educational processes.
3. Scholarship funds are available to assist deserving and needy students who cannot meet the fees that must be charged if high standards are to be maintained.
4. It has a trained and experienced faculty; that is, the men who form its staff are teachers of experience with long practice in dealing with the individual problems of students.
5. All work is conducted on a regular classroom basis to meet the approval of higher institutions and the New England College Admissions Board requirements.
6. The size of the classes is such as to permit reasonably individualized attention.
7. The courses are conducted so that the content of each course is thoroughly covered in order that it may be of the maximum value to the student, not only in the interests of his personal growth, but as preparation for further study.
8. The student body is adequately prepared for the type of instruction which is to be imparted in the classroom. The level of achievement is not lowered by the admission of unfit students.
9. High quality of performance is maintained in the classroom, and students bring to bear on their studies an interest and enthusiasm which permit all work to be conducted on a high, qualitative plane. Classes are not conducted to be a vehicle by which students may obtain credit by easy and slipshod methods. Credit is awarded only when the quality of the student's work meets the definition of Requirements of the College Entrance Examination Board and the New England College Admissions Board.
10. Its graduates have proved successful in college, in the professions, and in business life.
11. There are adequate laboratories, classrooms, and other facilities.
12. The employment of a full-time administrative organization affords opportunities for skilled educational and vocational guidance.

Aims of the School

The aims of the Lincoln Preparatory School may be classified as follows:

1. The offering of educational opportunities to men and women by methods of instruction carefully adapted to the needs of adult students.
2. The providing of this instruction at convenient evening hours, so that the student need not leave his or her present employment while obtaining an education.
3. The conducting of the school work on such a high qualitative plane that those students who wish to prepare for college may be adequately prepared for entrance examinations, or for entrance by certificate if their ability and performance warrant.
4. The offering of a general program to those who do not plan to enter college, that they may develop a taste for the better things in life and that they may advance to a larger personal growth.
5. The offering of special courses for those who have particular needs related to specialized occupations.
6. The selection of the most competent and experienced faculty available.
7. The maintenance of the excellent work which has earned for the School the approval of the New England College Admissions Board.
8. The personal interest of every school officer in the problem of the individual student.

Location of the School

The work of the School is conducted in the following four buildings of Northeastern University situated on Huntington Avenue just beyond Massachusetts Avenue at the entrance to the Huntington Avenue subway.

Richards Hall is situated at 360 Huntington Avenue. This building is adequately equipped with classroom, drawing room, and laboratory facilities. In the basement are the checkroom, the bookstore, and the Husky Hut. The School office is located on the first floor.

New Building. In this building are located the Chemical Engineering and Biological laboratories, a large Commons room open to day and evening students, and eighteen classrooms and lecture halls.

The East Building, in which are situated the University library, several classrooms, and the Chemical laboratories.

The South Building is situated in the rear of the East Building and contains several classrooms and the Electrical laboratories.

Student Body

The students of the Lincoln Preparatory School are men and women of earnest purpose, who have come to recognize the value of education but who through force of circumstances have been unable to complete a high

school course. The ages of the students range *from fifteen to sixty-nine*, with the average age *twenty-two*.

Some students are attempting to increase their vocational opportunities; some are completing a high school education begun elsewhere but interrupted; some are beginning here their high school work; some are adding to their training cultural or practical subjects which were formerly omitted; some are undertaking special courses to prepare them for increased usefulness in war work. In fact, the School is ready to serve students of all ages at a point where they need real service. The student body represents also men and women from all walks of life.

Alumni

The Alumni of the Lincoln Preparatory School are excellent witnesses of the work the School has done and is doing.

Many of our graduates are engaged in the various professions, such as Engineering, Law, Medicine, Teaching, and Dentistry, or are engaged in successful business activities and in public life. Furthermore, the School has been of benefit to many who did not complete our graduation requirements but obtained here the credits necessary for college entrance or for some other specific purpose, having completed elsewhere part of their high school training.

Women graduates of this School are in the hospital training schools of the State or have graduated therefrom. Some occupy teaching and administrative positions in our hospitals. Many others have proceeded to colleges and professional schools to prepare for positions in teaching, library science, and business.

Our former students are in colleges and professional schools scattered across the country. The following are some of the colleges that have been attended by Alumni of the Lincoln Preparatory School:

HARVARD UNIVERSITY
TUFTS COLLEGE
MASSACHUSETTS INSTITUTE
OF TECHNOLOGY
BOSTON UNIVERSITY
UNIVERSITY OF MICHIGAN
JACKSON COLLEGE
PURDUE UNIVERSITY
UNIVERSITY OF ALABAMA
COLUMBIA UNIVERSITY
COLBY COLLEGE

SIMMONS COLLEGE
UNIVERSITY OF MAINE
CLARK UNIVERSITY
MASSACHUSETTS STATE COLLEGE
UNIVERSITY OF CHICAGO
SYRACUSE UNIVERSITY
YALE UNIVERSITY
DARTMOUTH COLLEGE
BOWDOIN COLLEGE
BATES COLLEGE
NORTHEASTERN UNIVERSITY

INFORMATION REGARDING ADMISSION

Admission Requirements

Any man or woman of good moral character, regardless of occupation, race or creed, who has completed at least eight grades of a grammar school, or the equivalent, may enroll in the School.

The courses offered are designed to prepare students to enter institutions of higher learning. Those students, however, who do not intend to proceed to higher institutions may select from the offering of courses a special combination of subjects which will benefit them in the work in which they are engaged during the day. Before enrolling for such subjects, students are urged to see the Headmaster, explaining the particular nature of the employment in which they are engaged, so that he can arrange the program best suited for their needs. Special combinations of subjects may be selected to embrace business, science, or special technical work.

Applications for Admission

Students who plan to enter the School must file the official application blank which must be accompanied by the registration fee of five dollars. All applications for admission should be filed as early as possible in order that the status of each student may be definitely determined and a satisfactory program arranged before the actual opening of the term.

Credit from Other Schools

Students who have completed high school work in other approved institutions may obtain credit for that work towards the diploma of this School by presenting a certified transcript of record from the school previously attended. The officers of the School are glad at all times to obtain for prospective students transcripts of their records of work at other schools, evaluate such records in terms of diploma credits and suggest a program, indicating the cost of the program and the time necessary to meet graduation requirements.

The responsibility devolves upon the student for making sure that his program does not contain a subject for which prior credit has already been awarded in some other school. Such courses, however, may be taken without credit as review courses preparatory to later advanced work.

ADMINISTRATIVE REGULATIONS

Examinations and Quizzes

Examinations are held throughout the term at the discretion of the instructors. Final examinations are required upon the completion of all courses. The following system of grading is used:

- A — 90 to 100 — Excellent
- B — 80 to 89 — Good
- C — 70 to 79 — Fair
- D — 60 to 69 — Lowest Passing Grade
- E — 50 to 59 — Conditioned
- F — Below 50 — Failure

A student marked E (Conditioned) may enroll in the advanced course in the same subject immediately following, but upon condition that he remove his deficiency by special examination early in the next term. A fee of \$3 is required for each such examination regularly scheduled.

A student receiving the grade of B is exempt from examination when applying for admission to the colleges composing the New England College Admissions Board. A list of these colleges is given on page 20. It is to be noted, however, that colleges retain the right to accept or reject applicants for admission.

Transfers

Students are not permitted to change from one course to another without first consulting the Headmaster or other duly authorized officer of the School and receiving a Transfer Order.

Reports of Standing

An informal report of the student's standing is issued at mid-term; and the formal report, covering the full record of the term, is issued at the close of each year.

In the case of students who are under twenty-one years of age, reports may be sent to parents in the event of unsatisfactory work on the part of the student, non-compliance with administrative regulations, continued absence, and withdrawal. Parents of minors may obtain reports at any time on request.

Attendance Requirements

A careful record of attendance upon class exercises is kept for each student. Absence from regularly scheduled classes on any subject will seriously affect the standing of the student. It may cause the removal of certain subjects from his schedule and the listing of these as "conditioned

subjects." However, if reasonable excuse for absence be presented, the student may be allowed to make up the time lost, and be given credit for the work; but he must complete the work at such time and in such manner as his instructor in the course shall designate.

A minimum attendance record of 75 per cent must be maintained in all classes before a student will be admitted to examination.

Scholarships

The Executive Council has made available a few scholarships to assist needy students of good mental capacity who, because of financial limitations, might be deprived of educational opportunities. The award when a scholarship is granted is never in excess of one-half of the student's tuition fees for the year.

Late Registration

Those who find it necessary to register late may at the discretion of the Headmaster be permitted to enter the School provided they have not lost so much work as to render it impossible for them to proceed with the courses.

No reduction in fees is made because of late enrollment.

Examination Fees

The fee for a condition or make-up examination regularly scheduled is \$3.

The fee for a make-up quiz regularly scheduled is \$1.50.

Charges for Damages

Students who damage apparatus in the laboratories or who willfully destroy School property will be responsible for the replacement of such damaged articles or for the cost of replacing where this is undertaken by the School.

GENERAL INFORMATION

Libraries

In the East Building a large and well-equipped library is available for the use of students. The reading rooms are open from 9 A.M. to 10 P.M. on weekdays, and from 9 A.M. to 1 P.M. on Saturdays. Students have also the privilege of securing books from the Boston Public Library and its branches. To obtain this privilege application should be made at the School office, where the necessary blanks will be furnished.

Textbooks and Supplies

The Bookstore, which is situated in Richards Hall, is operated for the convenience of the student body. All books and supplies which are required by the students for their work in the School may be purchased at the Bookstore.

Railroad Tickets

Vouchers for half-fare tickets on the Boston Elevated Railroad are issued by the School office on the first, sixth, and eleventh Fridays of each term. The railroad systems entering Boston issue students' tickets to students under twenty-one years of age. Applications for these may be obtained at a railroad office and presented at the School office for signature.

Visitors

Visitors are always welcome at one class session in any department. Those who wish to visit any of the classes should call at the School office and obtain a visitor's card signed by the Headmaster.

Educational Guidance

Prospective students or those desiring advice or guidance with regard to any part of the school work or curricula, or who wish assistance in the solution of their educational problems, should note the fact that interviews are available without obligation, and that the officers of the School will do their utmost to see that a program is designed which is the most satisfactory for the individual student. In certain cases, other institutions may be recommended which suit the student's needs better. Furthermore, it is important that those with educational problems to solve should realize the necessity for care in approaching educational work so that the program selected will be on the best educational basis.

TUITION FEES

Registration Fee. \$5 is payable by all students on their initial entrance to the School. This fee is not returnable except where a student is refused admission.

Payment Plans

For each term indicated below is listed the appropriate payment plan. When these plans are adopted, they must be rigidly adhered to. *In certain cases, however, even the special plan of payment will not meet the needs of many deserving students. Such students are requested to confer with an officer of the School, who will arrange a satisfactory plan for the payment of fees.*

Regular Term and Winter Term

The Regular Term begins in September and continues for 32 weeks. During this term students may carry three full-unit courses.

The Winter Term begins in January and extends for 20 weeks. The work is carried on more intensively than in the Regular Term, but the same ground is covered, primarily by means of a longer classroom period. During this term students are permitted to carry two full-unit courses.

The cost of each course is \$40. Fees are payable in monthly installments. The first installment is due on registration; thereafter payments are due on the first Tuesday of each month.

Summer Term

The Summer term begins in June and extends for 15 weeks. During this term students may carry two full-unit courses. A full year's work is covered in each course.

The cost of each full-unit summer course is \$30. Fees are payable in three successive monthly installments.

The first installment is due on registration. Subsequent payments are due on the third Tuesday of July and August.

Special Rates for Sciences

Biology

Tuition fee	\$40.00
Laboratory fee	5.00

Physics

Tuition fee	\$40.00
Laboratory fee	5.00

Chemistry

Tuition fee.....	\$40.00
Laboratory fee.....	5.00
Laboratory deposit.....	5.00

The unused portion of the chemistry deposit is refunded after deduction for breakages and for non-returnables.

Charges for Partial Attendance

In the event of a student's withdrawal from school, he is charged on a *pro rata* basis for the weeks he has attended. These charges are as follows:

32-week courses — *4 per cent of the total charges for each week of attendance in each semester.*

20-week courses — *6 per cent of the total charges for each week of attendance in each half term.*

15-week courses — *8 per cent of the total charges for each week of attendance.*

The same charges are applicable in the event that a student abandons a part of his program. In addition, the full Laboratory Fee is charged in those cases where a student is pursuing a laboratory course.

Refund Policy

Students who are forced to withdraw from a course or from the School are required to notify the School office by completing the withdrawal blanks which will be furnished.

Since the School assumes the obligation of carrying the student throughout the year for which he registers, and since the instruction and accommodations are provided on a yearly basis, the Officers of Administration have ruled as follows:

- A. The registration fee is not refundable.
- B. *Applications for refunds must be presented within forty-five days after withdrawal from School.*
- C. Refunds in the case of complete withdrawal from School will be granted by the Committee on Withdrawals for reasons which they deem adequate.
- D. Refunds are computed from the date of application for refund, not from the date of last attendance; hence students who are compelled to discontinue attendance should immediately report the fact to the School office.

INFORMATION REGARDING PROGRAMS

The Unit System Explained

Frequent reference is made in this catalog to "units," and that there may be no misunderstanding in the minds of students, this explanation is offered. A unit of high school credit is given upon the satisfactory completion of the work of one school year in a single standard subject, the equivalent of which is covered by this School in thirty-two weeks or in the intensive courses of twenty and fifteen weeks offered in the winter and summer terms respectively. The following exception is to be noted: Four full courses in English total three units towards graduation or towards college entrance.

Terms and Hours of Attendance

When arranging a program for a student the School officers usually assign work which requires attendance for *only two evenings a week*.

All classes are scheduled to meet between the hours of 7 P.M. and 10 P.M.

Each term a schedule is prepared listing the courses to be offered and the hours at which they meet. A copy may be obtained on request.

Following is the general arrangement for the completion of a course in each term of the school year.

Fall Term (32 Weeks)

One full-unit course requires attendance for one hour twice a week. Students may carry one, two, or three courses during this term.

Winter Term (20 Weeks)

One full-unit course requires attendance for one and a half hours twice a week. Students may carry one or two full-unit courses during this term.

Summer Term (15 Weeks)

One full-unit course requires attendance for one and a half hours twice a week. Students may carry one or two full-unit courses during this term.

Courses of Study

Algebra 1	French 1	History (English)
Algebra 2	French 2	History (United States)
*Biology	French 3	Latin 1
*Chemistry	Geometry (Plane)	Latin 2
Economics	Geometry (Solid)	Latin 3
English 1	German 1	Latin 4
English 2	German 2	*Physics
English 3	Government	Spanish
English 4	History (Ancient)	Trigonometry
	History (European)	

*These courses meet only once a week in the fall term and twice a week in the winter and summer terms. All other courses meet twice a week, usually on Tuesdays and Fridays.

How to Plan Your Program of Classes

In choosing subjects each term, students should bear in mind:

- (a) The requirements for graduation from the Lincoln Preparatory School. These are given on page 20.
- (b) The admission requirements of the higher institution they wish to enter. Catalogs of most colleges are on file at the School office. In case of doubt, consult these and talk with the Headmaster or his assistants.
- (c) The special requirements for various professions and vocations.
- (d) Their special interests, in the event that courses are chosen from the cultural point of view.

It is especially important to meet the requirements for graduation so that a diploma may be obtained. Most colleges and hospitals and many lines of business and industry not only require fifteen units of high school work, but also insist that the student be a graduate of a recognized high school. Moreover, in business and in everyday life it means infinitely more to say one is a high school graduate than merely to say one has completed fifteen units of high school work.

How Long Will It Take to Obtain a Diploma?

The flexible schedule and the twelve months' operation of the Lincoln Preparatory School enable a student to save considerable time. The exact time that it will take to obtain a diploma is dependent upon credit from former institutions attended, hours available for study, and the number of courses pursued. A student who enters school without any credit for former high school attendance can complete his course in from three to five years, according to the number of summer terms he attends. However, it is urged upon students that *a high school education is a matter of accomplishment and not a matter of time*, and the School insists on a high standard of accomplishment.

Admission to College

Since the Lincoln Preparatory School offers regular college preparatory courses for those who wish to enter college, a student, according to his record and his plan of procedure, may enter college in one of the following ways:

By Diploma. Certain colleges will admit students on the diploma from this School. Among these colleges are all those that accept a standard high school diploma.

By Examination. A few colleges, notably Harvard, Yale, and the Massachusetts Institute of Technology, require certain examinations from all candidates. This School prepares students for all college entrance examinations and for the examinations of the College Entrance Examination Board.

By Certificate. The School is accredited by the New England College Admissions Board. Some of the colleges which accept the certificate of this School are Amherst, Bates, Bowdoin, Colby, Massachusetts State College, Clark, Middlebury, Tufts, Wesleyan, Williams, and Worcester Polytechnic Institute. Generally speaking, *institutions that accept students by the certificate method will accept the certificate of this School. The certificate grade is 80 per cent.*

Admission to Hospital Training Schools

Since the School is fully accredited, most hospitals will admit students who hold the diploma of the School even though all grades are not of certificate rank. A few hospitals, however, require certificate grades of candidates for training. Certificate grades from this School are acceptable. Each student should ascertain, however, the definite entrance requirements of the hospital she plans to enter.

Requirements for Graduation

The diploma of the Lincoln Preparatory School is granted without charge to the student on the completion of a total of fifteen units of work, *of which at least four must have been earned in the Lincoln Preparatory School.* In addition, each student must have completed in this School or elsewhere the required subjects for the diploma for which he is a candidate.

Curricula

COLLEGE COURSE DIPLOMA

A. For admission to Liberal Arts Colleges

This course prepares for most colleges that offer the degree of Bachelor of Arts.

<i>Required:</i>	Units
College Preparatory English	3
Algebra	2
Plane Geometry	1
French or German or Spanish	2
Physics or Chemistry or Biology	1
United States History	1
Latin or Greek	2

Elective:

The remaining three units may be selected from the following:

	Units
Spanish	2 to 3
Latin	1 to 2
French	1 to 2
European History	1
Ancient History	1
Solid Geometry	$\frac{1}{2}$
Trigonometry	$\frac{1}{2}$
Chemistry or Physics or Biology	1

One unit of a foreign language is not acceptable for credit.

Language and Mathematics requirements vary somewhat for entrance to the different colleges. This is especially true of the Latin requirements. Some colleges require three entrance units in either French or German. *It is the student's responsibility to meet the requirements of the college he elects to enter.*

In addition, other electives may be permitted by special consent provided they are acceptable by the college to which the student seeks entrance.

B. For admission to Engineering Schools and Colleges of Liberal Arts offering the degree of Bachelor of Science

<i>Required:</i>	Units
English	3
French or German or Spanish	3
Algebra	2
Plane Geometry	1
Physics or Chemistry	1
United States History	1
Trigonometry and Solid Geometry	1
	12

Two units of two modern languages will be accepted for three units of one language.

Language and Mathematics requirements vary somewhat for entrance to the different colleges. *It is the student's responsibility to meet the requirements of the college he elects to enter.*

Elective:

Subjects may be selected from either the Required or Elective List of the College Course to make up the necessary fifteen units.

One unit of a foreign language is not acceptable for credit.

GENERAL COURSE DIPLOMA

The General Course offers a general education and also, *if the right selection of subjects is made*, enables students to enter certain colleges. A wide selection of subjects is available but choice of as many college preparatory subjects as possible should be made.

<i>Required: Five Units</i>	Units
English	3
United States History	1
Physics or Chemistry or Biology	1
	5

Limited Electives: Three Units (choose one option)

Mathematics Option

Algebra 1, Algebra 2 or Physics, and Plane Geometry	3
---	---

Language Option

Three units of any one of the following or two units of any two: French, Latin, German, and Spanish	3 or 4
--	--------

Social Science Option

Economics, Government, English History, Ancient History, European History, etc.	3
--	---

Free Electives: Seven Units

Any standard high school subjects to complete total of 15 units

One unit of a foreign language is not acceptable for credit.

Special Program for Admission to Training Schools for Nurses

The work conducted by the Lincoln Preparatory School is accredited by the Massachusetts hospitals and by the State Board of Registration in Medicine. The State Board of Registration in Medicine and the Board of Registration of Nurses have ruled that a high school education or its equivalent is a prerequisite for admission to hospital training schools. The high school certificate must show the completion of fifteen units accepted by the high school in meeting graduation requirements. These fifteen units are to be as follows:

<i>Required (7 units)</i>	Units
1. English (4 years)	3
2. History	1
3. Mathematics	1
4. Science	2

*Free Electives (8 units)**

- | | |
|----------------------------|----------------------------|
| 1. Greek or Latin | 5. Social Studies |
| 2. Foreign modern language | 6. Commercial Studies |
| 3. Mathematics | 7. Fine and Practical Arts |
| 4. Science | 8. Miscellaneous |

An officer of the School will be glad to arrange a program so that these electives will be judiciously chosen, not only to aid the student in the sub-

*Not more than 4 units will be accepted in one group.

sequent subjects, but to meet the requirements of other states with which a reciprocal arrangement exists with the State of Massachusetts.

For those already engaged in the profession of nursing, attention is directed to facilities which are available to those who have not completed a high school education in accordance with the above demands. New regulations have been formed regarding institutional promotion and regarding teaching and administrative positions in hospitals, and while such legislation is not retroactive, it will certainly prove helpful to those who already occupy such positions to be adequately equipped for advancement and promotion in the event of transfer.

Because of the war emergency and the great need for nurses, some hospitals have modified their entrance requirements. Students should inquire at their hospitals for a definite statement regarding entrance requirements.

OUTLINES OF COURSES

The Lincoln Preparatory School reserves the right to change the arrangement of courses, the requirements for graduation, tuition fees, and other regulations affecting the students. Such regulations will affect both old and new students.

Note: The courses of the School are arranged in "units."

A unit is ordinarily the amount of work covered in a single subject taken four or five times a week for a year in a standard day high school.

In this School a unit may be covered in each subject in thirty-two weeks. See page 18 for explanation of unit system.

Students carry one, two or sometimes three subjects at a time. Fifteen units, properly selected (see pages 20 and 21), are required for graduation.

The high school courses described below are the equivalent of similar courses offered in a standard day high school.

English

The fundamental purposes of the department are to give the student efficient training in grammar in order to afford a sound basis for correct speech and writing; to instill correct principles of constructing sentences and paragraphs; to help him enlarge his vocabulary and to acquire an interest in words; to train him in the elements of logic as related to the organization and expression of thought; to teach him how to study; to impart an elementary knowledge of the types and the history of English literature; and to aid him in forming a taste for good literature and a genuine appreciation thereof.

English 1. This course is designed to bridge the gap between grade and high school English. Fundamentals of English grammar, the correct sentence, the more important rules of spelling and punctuation, simple compositions — especially the letter — and an introduction to literary selections as models for voluntary reading are presented.

English 2. This course marks the beginning of a more intensive study of English, both as a tool and as literature. Functional grammar, development of the paragraph, careful planning of themes, and a beginning of the critical study of literary forms, both poetry and prose, form the basis of the course.

English 3. This is an advanced course in composition including *précis*-writing and the structure of paragraphs and sentences. There is a rapid review of grammar and punctuation. The essay, the drama, the novel, and types of poetry are studied.

English 4. This course completes the two-year sequence begun in English 3. It prepares students for college entrance and College Board examinations and also stresses the needs of the student who does not intend to pursue formal study in a higher institution. By means of thought-provoking reading material, both classic and modern, it stimulates written expression on subjects of interest to the individual student. Compositions are submitted at regular intervals throughout the term. The essay, the drama, the lyric poem, and prose fiction are studied, and the principles underlying these forms of art are presented.

Latin

Exercises in translation at sight begin with the first lessons in which Latin sentences of any length occur, and continue throughout the course to insure correct methods of work on the part of the student. In the translations of passages from the Latin, the use of clear and natural English is insisted upon. Reading aloud is encouraged. The work in Latin Composition aims to give the student a thorough knowledge of the fundamental principles of Latin syntax. It has been found advantageous to use a double system of notebooks, calling for special written work from the student. This work deals with Latin forms, principles of Latin syntax, writing of English-Latin sentences, and finished translations of selected passages from the Latin. These courses in Latin fulfill the requirements of college entrance examinations.

Latin 1. Exercises in translations, English-Latin, Latin-English. Drill in Latin forms, drill in Latin syntax. The course aims to give the student a thorough knowledge of the fundamental principles of Latin syntax.

Latin 2. The Latin reading is not less in amount than Caesar, Gallic War, I-IV. This amount of reading is taken from Caesar (Gallic War and Civil War), Nepos (Lives), Aulus Gellius, Eutropius, Phaedrus, Quintus Curtius Rufus, and Valerius Maximus, or books of selections containing some of these with other authors of prose works. Special attention is given to sight translation, to vocabulary study, to the Latin Word List, which contains those words the student is expected to know at the end of two years of the study of Latin. There is continued drill in Latin syntax and in Latin forms. This course in second year Latin aims to meet the needs of those students who plan to enter colleges that require only two years of Latin.

Latin 3. The Latin reading is not less in amount than Cicero, the oration against Catiline, for the Manilian Law, and for Archias. This amount of reading is selected from Cicero (orations, letters, and De Senectute), Sallust (Catiline and Jugurthine War). The reading for the year includes selections from such authors as Pliny, Livy, or books of selections containing these and other authors of prose works. Special attention is given to the study of passages of Latin prose set for comprehension. The course aims to cultivate in the student the ability to render unseen passages of Latin prose into clear and natural English, as well as the ability to write simple Latin prose. Due attention is given, therefore, to vocabulary study, to the Latin Word List, which contains those words the student is expected to know at the end of three years of the study of Latin. The political and social life in Rome in the time of Cicero is studied.

Latin 4. The reading is not less in amount than Virgil, Aeneid I-IV. This amount of reading is taken from Virgil (Bucolics, Georgics, Aeneid), Ovid (Metamorphoses, Fasti, and Tristia), or from books of selections containing poems or extracts from other poets. Special attention is given to the study of passages of Latin verse set for comprehension. The course aims to cultivate in the student the ability to render unseen passages of Latin verse into clear and natural English, as well as the ability to write simple Latin prose. Due attention is given, therefore, to Latin forms, Latin syntax, to vocabulary study, to the Latin Word List, which contains those words the student is expected to know at the end of four

years of the study of Latin. Literary and historical allusions, prosody, and questions on subject matter are studied.

French

The courses in French are planned with the purpose of giving the students (1) an appreciative comprehension of French, both as literature and as a spoken language; and (2) a sufficient knowledge to fit them for advanced work. The essentials of the grammar are mastered by continued drill and constant application. The attainment of good pronunciation receives careful attention, and from the beginning the student is trained to understand spoken French.

French 1. This course begins with instruction in pronunciation. Phonetic symbols are not used. The acquisition of a basic vocabulary is stressed and the memorizing of word groups and short sentences.

The instruction in grammar consists of the elementary forms and uses of articles, nouns, adjectives, pronouns, adverbs, regular verbs, and a few common irregular verbs. Much emphasis is placed upon written translation of English into French.

The reading text provides for the translation of at least fifty pages of simple French. This is largely oral translation.

French 2. This course completes the elements of grammar and syntax, with special emphasis upon forms and practice in their use in written composition. Frequent review lessons help to make the student familiar with the essentials.

French 3. Bovee and Carnahan's "New French Review Grammar" is used and provides a general review and further advance in grammar and in written translation or connected prose. All the common irregular verbs and many idioms should be learned.

Bordeaux' "La Peur de vivre" provides for the reading of modern standard French.

German

At the end of the elementary course in German, the student should be able to read at sight and to translate a passage of easy German prose. He should be able to put into German, short English sentences taken from the language of everyday life, and to answer questions upon principles of German grammar. The course aims to meet the needs not only of those students who are seeking a general knowledge of German, but also of those students who are planning to take the college entrance examinations.

German 1. Chiles-Wiehr "First German Book" is used as a grammar and composition book. This is supplemented by reading Gueber Märchen und Erzählungen I, II, Immensee by Storm. Drill in pronunciation; practice in reading the German text aloud; memorizing of simple verse and prose selections.

German 2. "Chiles German Composition and Conversation" is used as a textbook. This is supplemented by reading "Emil und die Detektive" by Kästner, followed by translating such works as "Germelshausen" by Gerstäcker, "Die Braune Erica," by Jensen. Exercises in comprehension; memorizing of simple German verse and prose selections. "German Frequency Word Book" by Morgan, "German Idiom Word List" by Hauch are used.

Spanish

Spanish 1. The work of the first year is so planned that it serves as a complete unit in fundamentals for the student who wishes to continue the language independently by travel or reading. Correct pronunciation, a knowledge of the grammatical structure of the language, and an ability to read and write within the limits of a practical vocabulary are the goals of the course. Standard elementary readers are used in connection with a grammar text such as Hills and Ford, "First Spanish Course."

Spanish 2. After a rapid review of the work covered by Spanish 1, the second year is devoted to the enlargement of vocabulary, including common idioms, the increase of skill and speed in translation, with special emphasis upon sight translation and free composition. The course prepares for the elementary examination in Spanish given by the College Entrance Examination Board. The use of a standard composition book is supplemented by much reading of current as well as classical Spanish.

History, Government, Economics

The aim of the department is to give a broad knowledge of vital conditions in the growth of the leading countries of the world. This includes the study, not only of important historical facts, but more especially of the progress of development in government, society, business, religion, and education. The past is studied that the present may be better understood.

History (English). This course is a study of English History from the time of the Roman Conquest to the present. Special emphasis is given to the study of the structure of government and the legal system because of their bearing upon American development. Study of English foreign policy is essential to a better understanding of international problems of the present. Study of church problems, the Industrial Revolution, democratic growth are stressed because of present-day tolerant attitude in regard to religion, views as to wisdom of dictatorial or democratic government, and ever-changing economic conditions.

History (United States). A careful and comprehensive study is made of United States History, including not only the story of earlier times, but also an analysis of events from the Civil War down to and including our own times. Special reference is made to the social and industrial development of the country, economic progress, sources and effects of immigration, and of American government. The course is designed to cover the requirements of the College Entrance Examination Board.

History (European). In this course a study is made of the European powers from the beginning of the seventeenth century to the present. Autocracy rampant in the seventeenth and eighteenth centuries begins to decline in the latter eighteenth century with the French Revolution. The decline continued in the nineteenth century, giving way to democracy, which reached its peak following the World War, only to yield in many countries to dictatorships of the present day. International relations are traced, noting especially the influence of commerce and the subsequent imperial rivalries and wars. The Industrial Revolution, with its profound effect upon humanity, forms another important part of the course. Considerable stress is given to great leaders of the different European powers.

History (Ancient). This course devotes one term to the study of the Ancient Orient and Greece as far as the death of Alexander and the break-up of his empire, with the expansion of Greek culture in the Mediterranean world. The second term is devoted to the study of the history of Rome to the year 476 A.D. The course emphasizes the characteristic elements of these civilizations. The work calls for the study of an accurate historical textbook, in which not less than five hundred pages of text are devoted to the particular subject. Special attention is given to map study. The work is supplemented by a topical study of outstanding phases of the history of the period, including growth of institutions, historic characters, outstanding events and periods. The work calls for consultation of standard writers on Ancient History, especially books of Readings in Ancient History. The aim of the course is to meet the needs of those students who are seeking a general knowledge of the subject as given in a high school, to prepare students for the examinations that are given by the College Entrance Examination Board as defined in the Definition of Requirements, published by the Board.

Government. The forms of our local and state governments are taken up first. These are followed by a careful analysis of the Constitution of the United States, showing the relationship of the executive, legislative, and judicial branches of our National Government.

During the second semester a study is made of South America and the principal nations of Europe, and in addition the smaller nations where innovations may make investigation of governmental methods worth while.

Economics. A careful study is made of the origin and development of our industrial system, and an analysis into its component parts, together with the economic phenomena accompanying them. It is intended to make economics of practical value in everyday life.

During the second semester the course embraces the reform and improvement of our industrial system; taxation, the tariff, international trade, transportation, labor and capital, public ownership, wages and profits, and other current economic problems are treated.

Mathematics

The courses in mathematics are planned to meet the needs of all secondary students. They afford an opportunity for preparation in the mathematical processes which are necessary for success in industrial, commercial, or professional careers. They are intended (1) to acquaint the student with such mathematical processes and methods as he is most likely to need in the successful pursuit of other studies and in the various trades and occupations; (2) to prepare the student for the successful pursuit of the more advanced branches of mathematics in technical schools and colleges.

Algebra 1. This course introduces the student to: (1) the positive and the negative number; to its application in the four fundamental operations leading up to the solving of formulas and equations, both linear and fractional, in one and two unknowns; (2) the function of the graph for both pictorial representation and the solving of equations; (3) the literal number and the study of problems.

Algebra 2. Review of Elementary Algebra with more difficult problems. Quadratics and simultaneous quadratic equations, with applications, ratio, pro-

portion, and variation, progressions, binomial theorem, logarithms, and that part of Trigonometry required by the College Entrance Examination Board.

Geometry, Plane. The five books of Plane Geometry are studied. The numerous original exercises stimulate the power to reason clearly and to derive logical proofs. Special attention is given to those who expect to take college entrance examinations. This course meets College Entrance Board requirements.

Geometry, Solid. This course deals with appreciation of three dimensional relations, formal proofs of the standard theorems and originals, locus problems, properties and measurement of prisms, pyramids, cylinders, cones and the sphere.

Trigonometry. The major topics covered by this course are the theory and use of logarithms, solution of right and oblique triangles, trigonometric equations, proofs of fundamental formulas and identities based upon them, radian measure.

Drawing

Mechanical Drawing. The fundamentals of Mechanical Drawing are stressed in this course. A credit towards college entrance will be granted upon the completion of sixty-five problems or the equivalent. All work is individual and admits of progress according to the student's ability.

Instruction is given in the testing, use and care of the instruments and drawing supplies, and about thirty drawing plates are made. The topics studied in these plates include: technique practice, lettering, geometric constructions, orthographic projection, auxiliary views, revolution of objects, isometric, cavalier, cabinet and perspective projection, intersections, sections, helix and application, screw threads, dimensioning and inking.

Science

Biology. This is a comprehensive course in Biology designed to meet the requirements of the following persons: (1) prospective college students who are preparing for college entrance and College Board Examinations; (2) students who plan to enter institutions requiring credits in some science; (3) prospective nursing students; (4) those who desire an elementary knowledge of the structure and function of plant and animal life.

The multiple objectives of the course are: to gain the best approach to an understanding of facts, principles, and theories and to apply them in various ways; to help the student to develop a special interest in some part of the course; to give a fundamental understanding of living things, of their structure and function; to give a survey of the plant and animal kingdoms with the primary objective of creating interest in and appreciation of nature; to present the economic aspects of Biology; to present an adequate understanding of hygienic principles underlying all healthful living organisms; to meet the requirements of an elementary course in any life science which aims to contribute to both avocational and vocational training.

The course consists of lectures, demonstrations, discussions, and laboratory work.

Physics. This course is intended for two groups of students. First, it will meet the requirements of those expecting to enter a college or technical school. Secondly,

it is intended to help those who wish a general knowledge of the important laws and principles of Physics as applied to modern everyday experiences. The applications of Physics in such fields as household appliances, the weather, the automobile, the airplane, radio, etc., are particularly stressed with the idea of giving a background of culture and enjoyment.

Many students interested in mechanical lines will find it giving them a clearer understanding of the operations of devices of which they make constant use.

Laboratory experiments and lecture table demonstrations will illustrate the subject matter studied in the text.

Although the course is not intended to be highly theoretical, an elementary knowledge of Algebra and Geometry will be of assistance in the solution of problems.

Chemistry. This course has the twofold aim of preparing the student in Chemistry for entrance to any college or technical school and providing a general introduction to the subject for other purposes.

There are class discussions of chemical principles and of chemical materials, solution of numerical problems, practice in such exercises as writing of equations, demonstration experiments carried through by the instructor. The student does assigned experiments in the laboratory and writes reports of his work.

The more important elements, both non-metallic and metallic, as well as numerous compounds, are studied. Important laws and hypotheses of Chemistry are constantly stressed.

Unless there is urgent reason for following a different order, the student is advised to arrange his succession of courses in such a way that Chemistry will be preceded by a study of Physics.

THE LINCOLN PREPARATORY SCHOOL

360 Huntington Avenue, Boston 15, Mass.

Application for Admission

Application Received by..... Date.....19..

A fee of five dollars must accompany this application. Make checks, money orders, or drafts payable to The Lincoln Preparatory School

This fee is not refundable except when a student is refused admission

(date)

To the Headmaster:

I,.....
(First Name) (Middle Name) (Last Name)
hereby apply for admission to the Lincoln Preparatory School, and submit the following information:

(Street Address)

(Town)

Age.....Date of Birth.....

Place of Birth.....Nationality.....

Home Telephone.....

Business Address.....
(Concern) (Street) (City)

Business Telephone.....Occupation.....

List other high schools attended (State whether day or evening)

Name of School	Approximate Date of Attendance	Day or Evening

Do you wish to receive the diploma of this school?.....

Do you merely wish to earn credits here without qualifying for the diploma?.....

Do you plan to enter college?.....

If so, which college?.....

If under 21, give name of parent or guardian.....

(Signature)

THE LINCOLN SCHOOLS

Evening Sessions

CLASSES OPEN TO MEN AND WOMEN

LINCOLN TECHNICAL INSTITUTE

Associate in Engineering Programs

Courses leading to the Degree of Associate in Engineering are offered in the following major fields:

AERONAUTICAL

ELECTRICAL

CHEMISTRY

ELECTRONICS

CIVIL AND STRUCTURAL

INDUSTRIAL

MECHANICAL

B.B.A. Degree Program

A six-year program conducted in conjunction with Northeastern University School of Business is available which leads to the degree of B.B.A. in Engineering and Management awarded by Northeastern University.

Special Programs

For those who do not wish to take one of the regular programs, special programs consisting of one or more courses can be arranged to meet individual needs.

LINCOLN PREPARATORY SCHOOL

Fully accredited by the New England College Admissions Board. General, Classical, and Technical high school courses are available. Students may enter in September, January, and June.

For further information write, indicating the school in which you are interested

THE LINCOLN SCHOOLS

360 HUNTINGTON AVENUE, BOSTON 15, MASSACHUSETTS

Telephone: KENmore 3177

Huntington School



THE HUNTINGTON SCHOOL FOR BOYS

An Urban Independent Day School

WITH THE ADVANTAGES AND PHYSICAL FACILITIES
OF A COUNTRY DAY SCHOOL



320 HUNTINGTON AVENUE
BOSTON, MASSACHUSETTS

Foreword

In the following pages you will read in some detail a description of THE HUNTINGTON SCHOOL FOR BOYS. For thirty-five years the School has enjoyed a steady growth. The growth has not been numerical alone, as we limit our enrollment to two hundred, but in reputation as a school for thorough college preparation. We are convinced that to succeed in college a boy needs scholastic competence, emotional stability, and a confidence in himself. The rapport and mutual confidence between teacher and student, which has become a part of our school life, does much to attain these goals. We have found that, in the main, boys will accept responsibility when they learn that a teacher's confidence in them is sincere.

HUNTINGTON has full scholastic accreditation. In addition to the curricular work, there is a complete program of sports and activities in order that the boys may become well oriented to college life.

There is much satisfaction to be derived from working with boys in their formative years. We are looking forward with pleasure to the coming school year.

CALENDAR

1945-1946

September 19	School Year Begins
October 12	Legal Holiday — No Classes
November 29, 30	Thanksgiving Recess
December 17 — January 2 .	Christmas Vacation
January 21-25	First Semester Examinations
January 28	Second Semester Begins
February 22	Legal Holiday — No Classes
March 18-22	Spring Vacation
April 19	Legal Holiday — No Classes
May 27-June 4	Final Examinations
June 7	Commencement
July 8-August 30	Summer Session (1946)

The Huntington School

Board of Trustees

ROBERT GRAY DODGE, *Chairman*

FRANK LINCOLN RICHARDSON, *Vice-Chairman*

WILMAN EDWARD ADAMS	CHANDLER HOVEY
HENRY NATHANIEL ANDREWS	MAYNARD HUTCHINSON
ARTHUR ATWOOD BALLANTINE	ARTHUR STODDARD JOHNSON
GEORGE LOUIS BARNES	IRVING EDWIN MOULTROP
FARWELL GREGG BEMIS	AUGUSTIN HAMILTON PARKER, JR.
HENRY GODDARD BRADLEE	FREDERICK SANFORD PRATT
GODFREY LOWELL CABOT	ROGER PRESTON
PAUL CODMAN CABOT	STUART CRAIG RAND
WALTER CHANNING	JAMES LORIN RICHARDS
WILLIAM CONVERSE CHICK	HAROLD BOURS RICHMOND
PAUL FOSTER CLARK	LEVERETT SALTONSTALL
DAVID FRANK EDWARDS	FRANK PALMER SPEARE
WILLIAM PARTRIDGE ELLISON	FRANCIS ROBERT CARNEGIE STEELE
JOHN WELLS FARLEY	CHARLES STETSON
ERNEST BIGELOW FREEMAN	EARL PLACE STEVENSON
FRANKLIN WILE GANSE	ROBERT TREAT PAINE STORER
HARVEY DOW GIBSON	EDWARD WATSON SUPPLE
HENRY INGRAHAM HARRIMAN	JAMES VINCENT TONER

Administrative Officers of the School

CARL STEPHENS ELL, A.B., M.S., Ed.M., Sc.D.
President

EVERETT AVERY CHURCHILL, A.B., Ed.D.
Vice-President

WILLIAM GREENE WILKINSON, A.B., Ed.M.
Acting Headmaster

Faculty

ROBERT OREN BATES, B.S.

Appointed 1940

B.S. St. Lawrence University, 1937; Graduate Study, School of Education, Boston University, 1937-; Teacher, Harrisburg Academy, 1938-40; Instructor, The Huntington School, 1940-.

Mathematics, Physics

CARL FERDINAND CHRISTIANSON, A.B.

Appointed 1927

A.B. Wesleyan University, 1923; Instructor, Tilton School, New Hampshire, 1923-24; Teacher, Abington High School, 1924-27; Instructor, The Huntington School, 1927-.

History, Economics

NORMAN GREENE, B.S.

Appointed 1939

B.S. Boston University, 1938; Graduate Study, School of Education; Teacher, Rogers High School, Newport, Rhode Island, 1938; Instructor, Nichols Junior College, 1938-39; Instructor, The Huntington School, 1939-.

History, Economics

Adviser of Forum

PRESTON HARVEY, A.B., Ed.M.

Appointed 1931

A.B. Bowdoin College, 1928; Ed.M. Boston University, 1942; Teacher, Portland Country Day School, 1928-31; Instructor, The Huntington School, 1931-.

Latin, Mathematics

Adviser, The Huntington Record

PERCY EDWARD JONES, B.S.

Appointed 1919

B.S. Boston University, 1930; Sloyd Training School, 1919; Instructor, Mechanical Drawing, The Huntington School, 1919-30; Instructor, Mathematics, The Huntington School, 1930-.

Mathematics, Drawing

ROLAND LEACH, A.B., Ed.M.

Appointed 1927

A.B. Tufts College, 1925; Ed.M. Harvard University, 1930; Instructor of French, Providence Country Day School, 1926; Instructor, The Huntington School, 1927-.

Modern Languages, English

Coach of Dramatics

OLAN A. RAND, B.A.

Appointed 1943

B.A. Washington and Lee, 1926; Graduate Study, University of Vermont; Teacher, Franklin High School, New Hampshire, 1926-28; Teacher, Barre High School, Vermont, 1929-43; Instructor, The Huntington School, 1943-.

English

ERNEST D. SAUNDERS, M.A.

Appointed 1944

A.B. Western Reserve, 1940; M.A. Harvard, 1941; Graduate Study: (1) Universite de Poitiers (Institute de Touraine) 1939; (2) Berlin-Schuleraustausch, 1938; (3) Diploma of Oriental Languages (Japanese), University of Colorado, 1943; Instructor, Colonie Francaise, Montreal, 1941; Teaching Fellow, Harvard, 1942; Instructor, The Huntington School, 1944-.

ALFRED L. SKINNER, A.B.

Appointed 1923

A.B. Harvard College, 1919; Teacher, Milford High School, Rhode Island, 1919-20; Teacher, North Andover High School, 1920-23; Instructor, The Huntington School, 1923-.

Mathematics

HAROLD C. WILCOX, S.B., M.S.

Appointed 1924

S.B. Rhode Island State College, 1915; M.S. Brown University, 1917; Instructor, Columbus Academy, Columbus, Ohio, 1917-18; Head of Science Department, Monson Academy, 1918-20; Principal, South Academy, 1920-24; Instructor, The Huntington School, 1924-.

Physics, Chemistry
Director, Science Club

Coaching Staff

Director of Athletics, Track	ROBERT OREN BATES
Baseball	PERCY EDWARD JONES
Basketball	LAWRENCE ROSEBUSH
Skiing	OLAN ALEXANDER RAND
Swimming	RAYMOND ENGLISH MILLARD
Tennis	ALFRED LORING SKINNER

School Physician, DR. GEORGE LANE

School Librarian, MISS MYRA WHITE

Secretarial Staff

MARQUITA MacHUGH

FRANCES C. BROWN

PHYLLIS L. WELCH

General Information

THE HUNTINGTON SCHOOL was founded in 1909. It had its origin in the apparent need in Greater Boston for a first-class independent day school possessing the following outstanding features:

- (a) it would permit its students to remain under the direct influence of the home;
- (b) it would offer a strong college preparatory program in an environment where character is emphasized;
- (c) it would furnish sports, games, and extra-curricular activities to round out the needs of the growing boy;
- (d) it would not be too large to permit ample attention to the individual student.

HUNTINGTON has been eminently successful in its aims. Its students come from all parts of Boston and the neighboring cities and towns, and are furnished the opportunity not only of securing a sound formal education for entrance to, and success in, college, but of attaining a strong body, strong character, and independence of thought through daily contact with well-rounded Christian men. Graduates are to be found in almost all of the New England colleges and in many colleges and universities throughout the country. More recently many of them have distinguished themselves in the armed forces of their country.

HUNTINGTON limits its enrollment to not more than two hundred boys. There is no desire to increase this number, which is sufficiently large to promote school activities of interest and value to growing boys. The size of the School thus makes it possible for the Headmaster and his associates to keep in close touch with the individual student.

While HUNTINGTON is essentially a day school, a few boarding students are accepted. The School accepts no responsibility with respect to the activities of such students after school hours. However, it will co-operate wholeheartedly in arranging for satisfactory living quarters for those who come from a distance.

BUILDINGS

The School is housed in a building especially equipped for educational work, with every facility for carrying out the complete program which it sponsors.

The recitation rooms are airy and well-lighted, designed for small classes, which permit a friendly yet diligent atmosphere to exist at all times. The number of students assigned to any class is rarely in excess of fifteen.

The Physics and Chemistry laboratories are well equipped for the thorough study of these Sciences. Through their facilities they afford opportunity for ample experimentation. A standard drafting room is available for those students assigned to Mechanical Drawing.

The swimming pool, seventy-five feet long by twenty-five feet wide, is supplied with filtered water heated to a proper temperature by an elaborate system of pipes. It is one of the finest in New England. The School has special hours reserved for the use of the pool.

In addition, there is a large lounge, the gift of Huntington Alumni, where students gather after school hours to play various games, to chat together, or read the various magazines and periodicals provided by the School. Additional rooms are available for special meetings, debates, chess matches, etc., that are held throughout the school year.

According to a pre-arranged schedule, THE HUNTINGTON SCHOOL has the exclusive use of the Samuel Johnson Memorial Gymnasium, which is the largest in Boston and is situated in the rear of the School and connected with it. On the main floor is the gymnasium proper, equipped with the best of apparatus. It is encircled by an elevated running track, twelve laps to the mile. The gymnasium also contains a visitors' gallery, a special locker room, shower baths, and various exercise rooms.

GROUNDS

THE HUNTINGTON SCHOOL enjoys the use of a large athletic field of approximately five acres in the Longwood section of Brookline



A STUDENT'S TEACHERS IN CONFERENCE



AN EXPERIMENT IN PHYSICS

on Kent Street, one and one-half miles from the school building. Transportation is furnished free of charge to and from the field. Here are ample and excellent facilities for all out-of-door sports. A completely equipped field house furnishes adequate facilities for both home and visiting teams. Altogether the School has one of the best athletic fields in Greater Boston. In addition to these grounds there are available at the school building tennis courts and other facilities for games and sports.

LOCATION

THE HUNTINGTON SCHOOL is located in the Boston Young Men's Christian Association building at 320 Huntington Avenue, in the educational and cultural center of Boston. It is within easy reach from all parts of Metropolitan Boston. The School is situated at the entrance of the Huntington Avenue subway and can be reached from Park Street in approximately nine minutes.

It is also within easy walking distance of the railroad stations at Back Bay, Trinity Place and Huntington Avenue, and of the Massachusetts subway station. Ample parking space is available to those who come to the School by automobile.

MORNING ASSEMBLIES

On Monday and Wednesday mornings, all students assemble in Bates Hall to take part in a brief devotional program. The School is non-sectarian but thoroughly Christian in the conduct of its religious activities. After these exercises matters of general school interest are briefly presented to the students.

On Friday the assembly is devoted to some special program. These generally consist of talks by distinguished visiting speakers, concerts, short plays, "movies," and programs in observance of days of national importance.

THE COMPLETE DEVELOPMENT PROGRAM AT HUNTINGTON

The School believes in the complete development of the individual boy and furnishes many opportunities for a boy to discover and develop his latent powers. For this reason, there has been developed, under competent leadership, an extra-curricular

program offering opportunities for supervised play, athletics, musical and other club activities.

Naturally, in a college preparatory school, scholarship must occupy the first place in the efforts of the teaching staff; but it is unquestionable that a boy who graduates with an appreciation of values as they should exist in a normal, healthy, and active life is more likely to succeed than one deprived of such opportunities for development.

PARENT-TEACHER CO-OPERATION

Successful preparation for college demands the co-operation of the boy, his parents, his teachers, and the college Director of Admission. The Headmaster and teachers are available by appointment to discuss problems that may arise. Parent-teacher meetings are held at regular intervals; these meetings enable parents to meet all their son's teachers at one time.

The School, on its part, requests the co-operation of the parents. They should make sure that the student spends sufficient time on home study, they should make sure that he reports to school according to his program and avoids being tardy, they should keep his absences to a minimum by making dental and other appointments outside of school hours.

In cases where parents are obviously out of sympathy with the aims and purposes of the School, it is necessary that they withdraw their boys from school.

ACCREDITATION

HUNTINGTON is recognized by all the leading colleges. It is a member of the New England Association of Colleges and Secondary Schools and of the Private School Association.

It has full certification privileges as granted by the New England College Admissions Board. It also has a Cum Laude Charter.

GEOGRAPHICAL DISTRIBUTION OF STUDENTS

HUNTINGTON is primarily a day school and because of this most of the boys in the School come from towns and cities within com-

muting distance. Because of the ease with which the School is reached by automobile, train, and trolley, each year finds boys enrolled from not less than fifty towns within a forty mile radius of Boston. It is true, of course, that a large number of our student group live within the confines of Greater Boston. Such towns as Arlington, Brookline, Cambridge, Dedham, Lynn, Malden, Medford, Medway, Melrose, Milton, Natick, Needham, Newton, Somerville, Stoughton, Taunton, Waltham, Wellesley, Winchester, and Woburn are, however, the homes of many of our boys.

Several boys come to the School from a distance. For such, satisfactory living conditions are arranged, usually in private families.

FACULTY

It is essential in a good preparatory school that the faculty be very carefully chosen. This is the case in THE HUNTINGTON SCHOOL, where the members of the faculty contribute to the success of the students because of the following characteristics:

- (a) they are graduates of the leading colleges and universities;
- (b) all have had long experience in college preparatory work;
- (c) they are men of culture and high ideals;
- (d) they understand the problems boys must face and have demonstrated their ability to work with boys;
- (e) all have served with the School for many years, take a pride in the School, and interest themselves personally in its aims for the success of the students.
- (f) they are all professional teachers making education their life work.



AWAY TO A GOOD START



THE ALUMNI ROOM

Admission Requirements

Parents or guardians who wish to enter their boys in HUNTINGTON should complete the application blank which will be forwarded on request. A registration fee of five dollars must accompany this application. This fee is in addition to the regular tuition charge and is not refundable.

Early registration results in advantage to the student since it enables the officers of the School to discuss every phase of a student's educational problem before he begins attendance, thereby saving time throughout the school year. Where possible, parents should obtain the boy's transcript of record from his former school and forward it with the application for admission, or request his high school to mail it to HUNTINGTON.

When the School has received the applicant's school record and character credentials, the student and his parent or guardian are requested to call for a personal interview in order that the boy's whole educational problem may be discussed in detail. It is expected that no boy will apply for admission whose conduct in other schools has been discreditable.

Boys are accepted for admission to all grades from the ninth through the twelfth. Special programs can be arranged for high school graduates which will meet their individual needs.

REFERENCES

Applicants for admission to THE HUNTINGTON SCHOOL must furnish the names of two persons, not relatives, who are able to vouch for the character and ability of the student and the financial responsibility of the parent.

The School is always pleased to refer those who inquire to parents, alumni, or educators, who are thoroughly familiar with the work of the School. Names and addresses will be furnished upon request.

Most of our students come to us through the recommendations of former students, their parents, and college deans.

ENTRANCE EXAMINATIONS

Since HUNTINGTON pays particular attention to each individual boy, formal entrance examinations are not generally prescribed. On rare occasions examinations may be necessary as a guide in arranging a student's program. However, aptitude or achievement tests are generally required of all students at certain intervals. Most HUNTINGTON students are admitted without examination because of previous satisfactory records.



METEOROLOGY CLUB

Graduation Requirements

Students in THE HUNTINGTON SCHOOL must meet definite requirements with regard to duration of attendance, scholastic record, and program of studies before a diploma will be awarded.

THE HUNTINGTON DIPLOMA

To receive the Huntington diploma, students must have earned fifteen units in subjects that are acceptable for college entrance. The pattern of these subjects may vary in content according to the type of college chosen and the professional goal of the student. A unit is ordinarily the amount of work covered in a single subject taken four or five times a week throughout the school year, or the equivalent thereof, except that four years of English are counted as three units. The student must complete in THE HUNTINGTON SCHOOL one full and continuous year of work embracing four to five units. Huntington Summer School credits are acceptable units towards the diploma.

ADVANCED CREDIT

Students from accredited high schools and other preparatory schools may receive credit towards the diploma for work that has been satisfactorily completed. However, such credit is not awarded automatically but is based on the general quality of past performance and the needs of the student with respect to his educational goal. For instance, a student who has earned a low passing grade in French I and who is apparently eligible for French II may be requested to repeat the course before proceeding with the advanced course.

Promotion at HUNTINGTON is entirely by subjects; hence the School is in an admirable position to help students who cannot meet or do not wish to meet graduation requirements, but merely require certain additional units, along with those earned elsewhere, to meet the entrance conditions of their chosen college.

Courses of Instruction

The following subjects are customarily offered by THE HUNTINGTON SCHOOL:

Languages

English, I, II, III, IV

French I, II, III

German I, II, III

Latin I, II, III, IV

Spanish I, II

Mathematics

Algebra I, II

Plane Geometry

Solid Geometry

Trigonometry

Physical Sciences

Biology

Chemistry

Physics

Social Sciences

United States History

English History

European History

Economics

Civics

Mechanical Drawing I, II

Descriptions of these courses are to be found on pages 32-35.

COURSE FOR HIGH SCHOOL GRADUATES

HUNTINGTON offers a one-year course which has proved of great advantage to many boys, particularly to certain high school graduates who fall into one or more of the following groups:

- (a) boys who need an additional year of preparation before proceeding to college because the pattern of their credits does not meet the demands of their chosen college;
- (b) boys who need to strengthen their foundation before entering college;
- (c) boys who need additional units of certificate grade;
- (d) boys who are eligible for college entrance, but rather young or immature to enter immediately, and who would distinctly benefit by additional study devoted to review or new subjects.

Admission to College

There are four principal methods by which a student may enter college. These are:

- (1) *By Diploma.* Many colleges will admit students who hold the diploma of THE HUNTINGTON SCHOOL.
- (2) *By Certificate.* In this instance students whose average grade is B may be admitted to certain colleges without examination.
- (3) *By Certificate and Examination.* Under this plan students who do not have a B average are required to take certain examinations to prove their efficiency. All colleges admitting students by certificate accept certification of THE HUNTINGTON SCHOOL.
- (4) *By Examination.* A few colleges, notably Harvard, Yale, and the Massachusetts Institute of Technology, require examinations of all candidates. This School provides excellent preparation for the entrance examinations of all colleges and for the examinations of the College Entrance Examination Board.

At the present time, the regular College Board examinations are suspended, and only the Aptitude and certain Achievement tests are being given. Future procedure is uncertain. One thing, however, remains: With respect to college entrance, much importance will be attached to the student's school record and his headmaster's recommendation.

While HUNTINGTON does all it can to prepare a boy to enter a particular college, it does not guarantee entrance to that college. Every student should bear in mind that his chances of entering the college that he and his parents choose is in direct proportion to the scholastic record he makes.

School Policies

TEXTBOOKS AND COURSE CONTENT

All textbooks and other material used as teaching aids are carefully selected and arranged to furnish the best possible preparation for college entrance and to be of maximum value to the individual students. Boys who understand this material should be well prepared to attain a very creditable record and will profit educationally.

HOURS OF ATTENDANCE

The School is in session five days each week. Attendance on Saturday mornings may be required of students who need supplementary instruction, who are behind in their work, or who are called back for disciplinary reasons.

The daily hours of attendance for boys in the School are from 9 A.M. until 2.15 P.M. Recreational and extra-curricular activities are held after 2.15. The schedule is as follows:

- 9.00 — 9.15 Assembly
- 9.15 — 12.15 Recitations
- 12.15 — 12.45 Lunch
- 12.45 — 2.15 Recitations

At HUNTINGTON it is the belief that habits of promptness and regularity formed in the secondary school years will tend toward dependability in college and later life. Close check is kept on tardiness and absences. A note from the parents is required to explain all absences.



FIELD HOUSE, HUNTINGTON FIELD

EXAMINATIONS

Examinations and tests are given at intervals throughout the school year at the discretion of the instructors. Major examinations are held at the close of each semester. Boys who fail in examinations must make up the deficiency within a prescribed time or revert to a lower Form in the subjects in which they failed.

MARKING SYSTEM

The following is the marking system used by the School:

A	90% to 100%
B	80% to 90%
C	70% to 80%
D	60% to 70% (unsatisfactory)
F	Failure
Inc.	Incomplete

A is a mark of high distinction and is given to a student whose work approaches perfection, or it may be considered as a grade representing approximately the best that may be expected of a student.

B is given for work plainly above the average. Students who are to succeed in the best colleges should be able to attain this grade consistently.

C is given for average work. The standards of the School are such that students obtaining some C grades with a majority of B grades or better may expect to succeed in many colleges and will be recommended for entrance to many institutions not requiring B grades for certification.

D is given throughout the year for work between passing and absolute failure. It is usually given to inform the student that by increased effort he may enter the C group. It is not given as a final grade, nor does it count towards the diploma credits.

F indicates failure and requires repeating the subject.

Inc., meaning Incomplete, is given for work which may be graded later as a result of make-up work or examination.

REPORTS

Reports of the boys' work are sent home frequently. Work missed for any logical reason is marked "incomplete" until made up, when the grade obtained in making up the work is substituted. Parents are invited to visit the School to discuss report cards with the Headmaster and teachers. At certain intervals throughout the school year parent-teacher meetings are held. Parents are urged to attend these meetings even in those cases where report cards appear satisfactory.

PARENTAL RESPONSIBILITY

The co-operation of all parents in the enforcement of policies is requested. Each boy is expected to be punctual in his attendance at every school exercise. The dismissal of a student before the close of the school day interferes seriously with the school routine and with the student's advancement. Only in case of unusual urgency should such requests be made. Outside appointments should be made at a time when they do not interfere with the school work.

Absence from school should be reduced to a minimum.

The School does not seek to enroll students who require severe restrictions. The right is reserved by the School to dismiss any boy whose conduct, influence, industry, or progress is unsatisfactory in the judgment of the Headmaster.

SPECIAL STUDY PERIODS

The School reserves the right to detain students after regular school hours, or on Saturdays, for disciplinary reasons, for tardiness, or to make up arrears of work.

LUNCH ROOM

A large lunch room is available in the building, where a satisfactory lunch may be obtained at moderate cost. There are also many restaurants in close proximity to the School.

Honors and Awards

Scholarship medals are awarded at the Commencement Exercises to the student in each Form who maintains the highest rank during the school year.

THE ALBERT WALTER SWENSON MEMORIAL MEDAL

Established in 1929 by Mrs. Swenson in memory of her husband. Mr. Swenson for nine years served the School faithfully as Head of the Modern Language Department and for two and a half years as Associate Headmaster. Awarded for excellence in French III.

THE CLASS OF 1928 MEDAL

Established in 1928 by the graduating class of that year. Awarded at Commencement to the member of the Senior Class who excels in English.

THE RICHARD JOHN CARROLL MEMORIAL MEDAL

Established in 1928 by the parents of Richard John Carroll, a graduate of the School in 1927 and president of his class. Awarded at Commencement to the student in the Junior Class who excels in English Composition.

THE ARTHUR STANTON CARLETON MEMORIAL MEDAL

Established by the parents of Arthur Stanton Carleton in 1930, the year in which Arthur would have graduated from THE HUNTINGTON SCHOOL had he lived. Awarded each year to the member of the Intermediate School whose play, spirit, and character have best maintained the traditions of the School.

THE ALBERT WALTER SWENSON PUBLIC SPEAKING MEDAL

Established in 1929 by friends of Mr. Swenson from the student body and alumni of the School. Awarded to the winner of the Public Speaking Contest.

RENSSELAER MEDAL

Rensselaer Polytechnic Institute awards a medal to that Huntington boy who obtains the highest record in the fields of Science and Mathematics.

FACULTY AWARDS

In addition to the above prizes, the Faculty offers prizes to the high ranking student in most Junior and Senior subjects.

CUM LAUDE SOCIETY

The Huntington Chapter of the Cum Laude Society was established in 1928. This is a national honorary society which in preparatory schools corresponds to the Phi Beta Kappa Society in colleges. Each chapter may elect to membership teachers of the school who are members of the Phi Beta Kappa Society, or any similar honorary society approved by the Board of Regents.

Extra-Curricular Activities

CLUBS

The School sponsors several extra-curricular activities. These vary somewhat from year to year, depending upon the desires of the student body. Generally, we have a Public Speaking Group, a Literary Club, a Chess Club, a Current Events Club, a French Club, a Science Club, a Glee Club and Orchestra. A group of boys form the Record Staff and publish a school paper called *The Huntington Record*.

PHYSICAL EDUCATION

While seeking the bodily development of the student through exercises suitable to his physique and interests, we at HUNTINGTON are not concerned exclusively with bodily development but also with general development. We believe that the by-products of games and sports are of great importance. For this reason the various squads are under the direction of men who because of their character and leadership provide valuable character training.

Play is just as much an essential part of any school program as study, provided it is properly supervised. A well-balanced program of physical education invariably does much to increase efficiency in the classroom. All boys are urged to take advantage of the opportunities available for athletic activity. The School has exceptionally well-equipped facilities for athletics.

SPORTS

Many different sports are offered during the school year. These are generally as follows:

Fall Sports — Football, Tennis, Swimming

Winter Sports — Track, Swimming, Skiing, Basketball

Spring Sports — Baseball, Tennis

While the School hopes to carry out a complete sports program, it is possible that, because of difficulties caused by the war, the program may be somewhat curtailed.

Financial Information

Tuition Fees The tuition rate for a student enrolled in a regular schedule (four or five subjects) is \$450, payable as follows:

Two-fifths upon entrance;
Two-fifths on December 1;
One-fifth on February 1.

Parents may occasionally arrange to make tuition payments on some other basis. Those who wish to depart from the customary plan should consult the Headmaster. However, it is to be pointed out that a student cannot be enrolled until a tuition payment has been made.

Registration Fee A registration fee of \$5 is due from all new students when a place is reserved. This fee is not refundable, even when the application is rejected.

Single Courses The flexible schedule at HUNTINGTON permits certain students to pursue individual subjects to a maximum of three subjects. The rate is \$125 per subject.

Laboratory Fees Students taking Physics or Chemistry are required to pay a laboratory fee of \$10.

Graduation Fee The graduation fee is \$10. All financial obligations to the School must be met before a student can be awarded a diploma or receive credit for work completed.

Books and Supplies All students purchase their own books and supplies. These may be purchased from the Northeastern University Bookstore, which is situated in a near-by building. Parents who wish their boys to open a charge account at the bookstore should make the request in a letter addressed to the Headmaster.

Medical Attention The School will not assume responsibility for injuries received or for expense incurred because of medical attention in connection with participation in athletics.

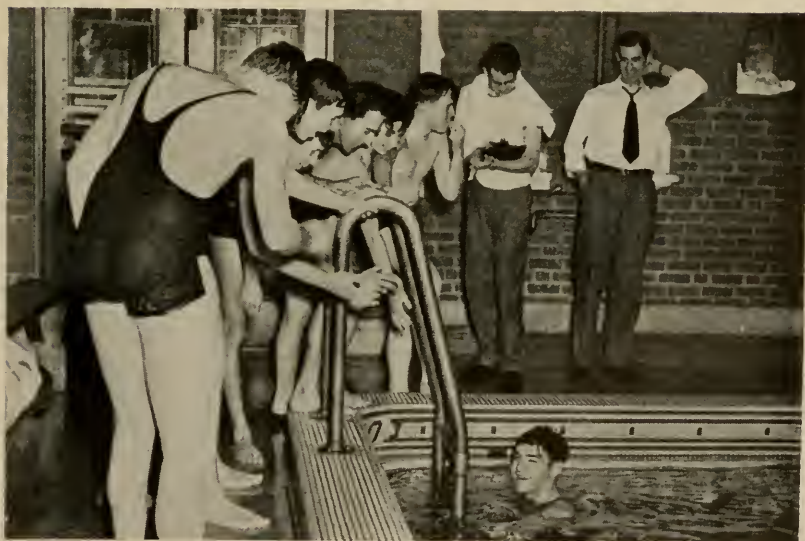
Parents are advised that for a small fee their boys may be insured against such injuries and also any injuries arising from travel to and from School.

Students' Tickets Students who live in a suburban town can secure railroad tickets at greatly reduced rates by applying at the office of the railroad. Students of the School are permitted to ride on the Boston Elevated on payment of one-half fare.

Charges for Damages Students who damage apparatus in the laboratories or who willfully destroy school property will be responsible for the replacement of such damaged articles or for the cost of replacing where this is undertaken by the School.



WARMING UP



THE WINNER

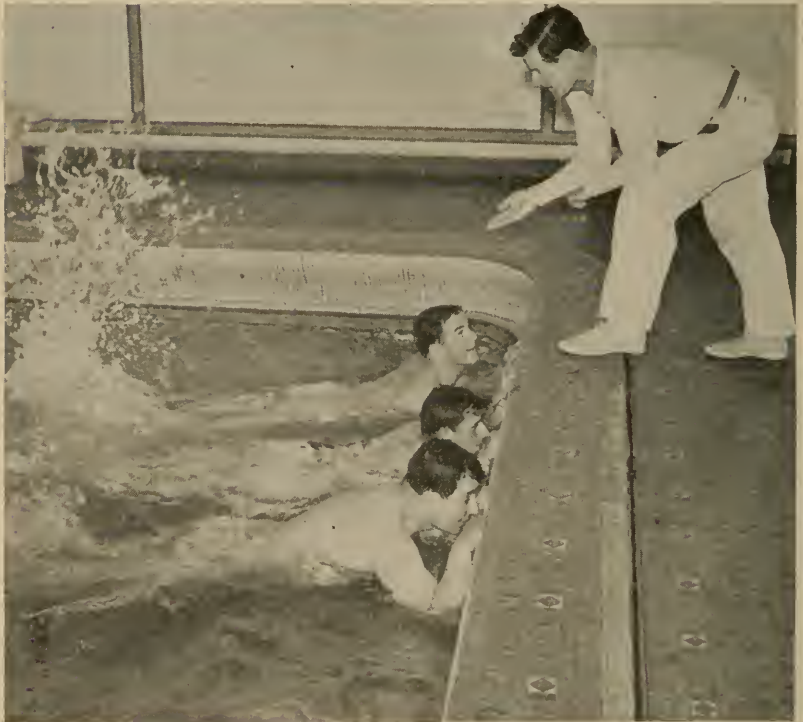
Refunds

The School assumes the obligation of carrying the student throughout the year. Instruction and accommodations are provided on a yearly basis. Therefore, no refunds are granted except in cases where students are compelled to withdraw because of personal illness. In such cases a medical certificate must accompany the application for refund.

Boys who withdraw from school to enter military service will be charged on a *pro-rata* basis. Here, too, appropriate documentary evidence is necessary.

Scholarship Fund

HUNTINGTON has a small Scholarship Fund designed to furnish financial assistance to those who, without such assistance, would be denied the advantages of the School. At present scholarships are available only to a limited degree. In all cases awards are based on (1) character, (2) ability, (3) need. All three items must be present before an application for scholarship will be considered.



SWIMMING INSTRUCTION

Huntington Summer School

COEDUCATIONAL

Each year, the School conducts a Summer Session beginning about the first of July and ending about the first of September.

THE HUNTINGTON SUMMER SCHOOL was established in 1912 and since that time has prepared a large number of students for entrance to the New England colleges and other colleges outside this area.

The aim of the School is to provide classroom instruction for those who are conditioned in grammar school, high school or college entrance subjects; for those who wish to complete a four-year high school course in two years and three summer sessions; and for those who wish to make special preparation for college entrance examinations given in the fall.

The teaching force is made up of the men of the regular school faculty.

All classes are small. The program of work is so arranged that a year's work in each subject is completed during the Summer Session. Because day school standards are maintained, students who elect work which they have not before attempted usually pursue only one or two courses. Those who are reviewing are limited to the amount of work that they can do well.

CHARGES

The rate of tuition in the Summer School is \$50 per subject.

Tuition is not refunded because of withdrawal or change of schedule. A laboratory fee of ten dollars is charged all students taking either Chemistry or Physics. These fees are payable on August 1.

Each student pays a registration fee of five dollars in addition to the tuition. Fees are not refunded in case of withdrawal. All fees are in addition to the regular tuition charge.

Three-fifths of the tuition is due upon entrance, plus the registration fee. The balance, including laboratory fees, is due on August 1.

A special circular of this School will be sent upon request.

Special Events Calendar

1944-1945

1. President Carl S. Ell Shows Colored Movies October 27
2. Miss Virginia Drew Interprets Students' Writing November 3
3. Mr. Pitt Parker, Cartoonist, Entertains November 10
4. Foreign Foods Club Visits Chinese Restaurant .November 17
5. Dr. Barber, Lecturer on Labrador December 1
6. Mr. Hinds, Dramatic Sketches December 8
7. The Foreign Foods Club Visits *The Nile*,
Egyptian Restaurant December 19
8. Mr. Visocchi and Miss Spaulding Present
Musical Entertainment January 12
9. Mr. Edward Payne, Creator of "Billy, the Boy Artist,"
Demonstrates the Art of Cartooning January 19
10. HUNTINGTON is Represented at the
"New England Junior Town Meeting of the Air" January 20
11. Mr. William Wallace Mystifies February 16
12. HUNTINGTON Participates in Winter Carnival
at Cushing Academy February 17
13. Civics Group Attends Hearing at State House . . .February 21
14. Huntington Dramatic Club Production March 9
15. Huntington Orchestra Presentation March 9
16. Mr. Elliott James, Liquid Air Demonstrator April 17
17. Prize Speaking Contest April 27
18. Huntington Senior Class Dance May 4
19. Annual Spelling Bee May 11
20. Commencement June 8



TWO POINTS

Description of Courses

ENGLISH

English I: Fundamentals of grammar with drill in punctuation, spelling, and sentence structure. Special emphasis upon the development of reading of modern and classical literature at levels that may be appreciated by first year pupils. Oral and written compositions, including letter writing.

English II: Functional grammar, paragraph development, planning and outlining of oral and written compositions. Vocabulary building and testing. Representative works of several types of literature are read, with emphasis upon the development of good taste in reading. The theory and practice of debating and group discussion.

English III: Study of rhetoric and composition with attention to paragraph development and sentence structure. Précis writing and paraphrasing. Vocabulary building. Study of style and literary types from a wide selection of modern and classical literature, including study of one play by Shakespeare. Some attention given to poetry. Creative writing.

English IV: Training and preparation for college entrance examinations in English composition. Planning and outlining for creative writing. A detailed study of all the main types of literature. Practice in critical reading of modern and classical literature. The drama is emphasized with plays of Shakespeare, Ibsen, Galsworthy, and contemporary dramatists being read. Special attention is given to the novel as a literary form.

LATIN

Latin I: The aim of the Latin I course is to develop the ability to comprehend and translate Latin sentences of simple grammatical construction. Emphasis is placed on accumulation of vocabulary and recognition of roots common to Latin and English.

Latin II: The course in Latin II is designed to speed up the rate of comprehension and translation, especially of sentences involving infinitive, participial, or subjunctive constructions. The materials selected for reading content are graded for the entire year in respect to their degree of difficulty. Caesar's Gallic Wars are read in the second semester.

Latin III: Selections from the orations, letters, and philosophical works of Cicero, as well as selections from Livy, Pliny the Younger, and Sallust provide the reading content of Latin III. The objective is the accomplishment of reading facility and power of comprehension, with increasing emphasis on appreciation of the prose style.

Latin IV: An appreciation of the literary merits of the Latin poets is developed through reading selections from the poems of Vergil, Ovid, Horace, Catullus, Tibullus, and Propertius. One semester is given to the study of Vergil's Aeneid.

FRENCH

French I: Study of the elementary principles of grammar. Practice in pronunciation and in easy conversation, including some dictation. Short written themes

and reading of French stories ranging from the simple to those of moderate difficulty. Introduction to the study of irregular verbs and common idioms.

French II: Complete review and continuation of the study of basic grammar and of the most common irregular verbs. Drill on vocabulary and the most frequently used idioms. Written composition and reading of selections of increasing difficulty. Simple conversational French and dictation exercises. Attention given to preparation for examinations required for entrance to college.

French III: Rapid survey of the fundamentals of grammar and stress on the writing of connected compositions involving the speech and idiomatic usage of everyday life. Review of irregular verbs and common idioms. Development of an adequate vocabulary based on word frequency. Drill to attain facility in oral comprehension and expression. Readings from French classics and modern works of moderate difficulty. Comprehension exercises on selections of greater difficulty. Dictation and the writing of original themes. Special instruction directed towards preparation for entrance requirements to colleges.

GERMAN

German I: An elementary course designed to acquaint the beginner with the rudiments of grammar as well as to give him training in pronunciation and easy German conversation. Drill exercises for the learning of vocabulary and word inflection. Reading of easy German stories and poems.

German II: Continual drill in grammar and syntax. Exercises in writing German from texts and from dictation. Composition work involving common everyday idioms. Reading of classical and modern poetry and prose. Some preparation given for entrance examinations to college.

SPANISH

Spanish I: The work of the first year is so planned that it serves as a complete unit in fundamentals for the student who wishes to continue the language independently by travel or reading. Correct pronunciation, a knowledge of the grammatical structure of the language, and an ability to read and write within the limits of a practical vocabulary are the goals of the course. Standard elementary readers are used in connection with a grammar text such as Hills and Ford, "First Spanish Course."

Spanish II: After a rapid review of the work covered in Spanish I, the second year is devoted to the enlargement of vocabulary, including common idioms, the increase of skill and speed in translation, with special emphasis upon sight translation and free composition. The course prepares for the successful further study of Spanish in college.

SOCIAL STUDIES

United States History: A comprehensive course, intended to give boys as complete an understanding as possible of our history. Problems of government, foreign policies, finances and currency, tariff, business, labor, and social reform are stressed. Map study is included.

English History: This course is designed especially for first and second year students. An effort is made to teach boys how to study history. Development of national unity, origin of indictment and trial jury, supremacy of Parliament, foreign policies, social and political reform are particularly emphasized.

European History: Development of the leading powers since the beginning of the seventeenth century is studied closely. The course forms a basis to an understanding of present-day problems. Map study is included.

Civics: The course aims at making the pupil aware of the privileges, duties and responsibilities embodied in citizenship. The functions of government are discussed in light of the present-day problems. The pupil is encouraged to read and discuss current news and comments as a means of formulating an intelligent opinion of his own.

Economics: A careful study is made of the origin and development of our industrial system, and an analysis into its component parts, together with the economic phenomena accompanying them. It is intended to make economics of practical value in everyday life.

During the second semester the course embraces the reform and improvement of our industrial system; taxation, the tariff, international trade, transportation, labor and capital, public ownership, wages and profits, and other current economic problems are treated.

MATHEMATICS

Algebra I: Fundamental laws and operations, linear equations, special products, factoring, fractions and fractional equations, simultaneous equations, radicals and exponents, graphs, formulas, functional relations, verbal problems.

Algebra II: Review of topics in Algebra I; quadratic equations, simultaneous equations involving quadratics, arithmetic and geometric series, binomial theorems, logarithms, trigonometric solution of right triangles, graphs, special emphasis on verbal problems.

Plane Geometry: The standard theorems of the five books of Plane Geometry with special emphasis on original theorems and numerical problems.

Solid Geometry: The standard theorems of the four books of Solid Geometry, with special emphasis on numerical problems, locus, and original theorems.

Trigonometry: Logarithms, solution of right and oblique triangles, the general angle and relations between its functions, identities, trigonometric equations, radian measure, navigation problems.

SCIENCE

Physics: The war has made this subject one of the most necessary of all the prerequisites for the armed services. The School endeavors to give its students a thorough grounding in the fundamentals of this science and to prepare them for further training in this field, if the opportunity arises. Scientific reasoning is stressed throughout the course, as it is believed that this is the heart and core, not only of success in school, but of success in life itself. The course includes lectures, discussions, laboratory experiments and problems, designed to meet the requirements of our best colleges.

Chemistry: This is one of our most rapidly expanding sciences. We find here a subject which challenges the interest of young people in general, as they stand upon life's threshold. A spirit of exploration and discovery is fostered here, which has led many in the past to continue chemistry as a life work. A fundamental aim is the development of a scientific logical organization of thinking processes, in the belief that here we have the key to a successful life. A well-rounded course of lectures, discussions and laboratory experiments fill the requirements for admission to any college.

DRAWING

Mechanical Drawing, First Year: Correct use of instruments, geometrical constructions, orthographic projection, cross sections and isometric drawings. Lettering is stressed. Neatness and accuracy are held as ideals.

Second Year: Continuation of above. Intersections, developments, working drawings and inking. Threads and assembly drawings.



SKI COACH SUPERVISES WAXING

WILLIAM RINDLEY
WALTHAM, MASS.
OCT. 1945

NORTHEASTERN UNIVERSITY LIBRARIES DUPL



3 9358 01114035 4

NORTHEASTERN UNIVERSITY LIBRARIES



3 9358 01114035 4